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Air Conditioning & REFRIGERATION NEWS

Production Tools for Victory

AN INTERNATIONAL INSTITUTION ★ SUBSCRIBERS ALL OVER THE WORLD ★

Technical Governmental

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DETROIT

Inside Dope

By George F. Taubeneck

Prospects for Electric Range Sales Are Good
Sales Appeals
Westinghouse Survey
Selling the All-Electric Kitchen Step by Step
More on Future Taxes

Prospects for Electric Range Sales Look Good

Will electric range sales hit the million - units - per - year mark soon after full production is resumed? Some market analysts think so. Others doubt that the total will pass the 900,000 point for many years yet; but all agree that the business will advance strongly.

In view of the fact that range sales never passed half a million to 700,000 units annually before the war, we may expect at least a 50% increase in the business—if the optimistic prognosticators are correct in their views.

Even the skeptics believe that this appliance is "overdue." It has plugged along for years and years at a comparatively slow rate, despite its highly obvious advantages as a home possession. It has comprised a "slow" business, and one which has seldom enjoyed major promotional efforts—either on the part of the manufacturers or dealers.

Among the dealers, ranges have been largely a companion appliance, a product to round out the line, or something to sell to a satisfied refrigerator customer. There are exceptions, of course, but in the main dealers have not pushed ranges to the extent they have propelled some of the hotter lines.

But now their opportunity seems to be arising. One market alone—that of new housing—should provide a rewarding field. If a million and a half new homes are built annually for the first 10 years following the war, as some real estate men predict, right there you have an outlet for all the ranges the industry will probably build during that period.

Furthermore, there's a low saturation mark for electric ranges, as contrasted with that for other major appliances, such as refrigerators, washers, vacuum cleaners, and radios. It's an opportunity for salesmen. To be sure, range selling has always been *hard* selling, but scores of dealers have proved that it can be done.

Range replacement sales in prewar days ran about 5% of those in use—not a large figure. But the replacement percentage for ranges should jump—just as it will for all overworked-in-wartime-appliances.

War "home front" experiences have given most housewives a new set of values for their time. And inasmuch as cooking accounts for possibly 30% of the homemaker's working hours (one study shows 836 hours per year spent on preparing meals), you can bank on it that Mrs. Jones is interested in the story range salesmen will have to tell about time-saving.

Every woman could live a better and a happier life if only she had more time at her disposal. And if the range can save her time—as it can—she'll be mighty interested in the story.

Electric cookery is clean, cool, fast, accurate, and uniform — attributes which will have especial appeal to the millions of new housewives just beginning their homemaking careers after the war. Being well educated, in general, these girls will be susceptible to stories of vitamin-preservation effected through modern range cookery.

Favorable electric rates in a given area are the first characteristic determining the market possibilities for electric ranges. Adequate wiring,

(Continued on Page 6, Column 3)

Krug Denies WPB Action Holds Up Appliance Plans

WASHINGTON, D. C.—A denial that any forces within WPB were holding up plans for getting back into production of refrigerators and other appliances was made by J. A. Krug, WPB Chairman, at his most recent press conference.

Mr. Krug said that H. G. Batcheller, WPB Chief of Operations, was occupied in working on a program for production for civilian use of refrigerators and other appliances, which would "go into effect" as soon as the European war permits.

Bottlenecks still exist, he warned, in the labor supply and in the matter of such components as fractional horsepower motors, but he claimed that WPB was working on all of these problems and had not run into any unforeseen delays.

Mr. Krug also refuted rumors that the Office of Civilian Requirements was on its way to being dissolved, saying that it would have a definite place in the reconversion period.

Chain Store Trend To Self-Service On Meats Seen

CHICAGO—Food chain stores are apparently making plans to go "all out" on self-service after the war, the long-predicted self-service meat departments seem on their way to become a reality, it was indicated by developments at the recent annual meeting of the National Association of Food Chains.

The food chains seem definitely to be going to quick-frozen products in the fruit and vegetable field, and they are seemingly putting pressure on the meat packers to have packaged quick-frozen meats available in volume not too long after normal food production and distribution processes return. Meat would come to the retailer's store under the processor's label and guarantee, with the shopper picking up whatever cuts he happens to select.

"In fact," said one commentator, "one gathers that the ideal postwar chain grocery store will consist largely of lines of open-front refrigerators, into which eager customers will dip their hands without even having to slide open a cover."

Demonstrated at the meeting were new open-front self-serve models, these cases being so constructed that cold air circulates under the open displays, while a partially built-up glass front keeps warm air out, without interfering with the "reaching in and selecting" movements of the customer's arm.

Also shown were new low-temperature cases with glass fronts that open, in a design said to be far easier to "shop" than some of the former quick-frozen food cabinets.

Seeger Refrigerator Co. Names New Officers

ST. PAUL — Seeger Refrigerator Co., at its annual meeting of stockholders and the board of directors, elected G. R. Seeger chairman of the board, according to an announcement made last week by Walter G. Seeger, who was re-elected president.

Other officers elected included: N. H. Griebenow, vice president and works manager; J. J. Leonard, vice president in charge of sales; C. A. Muessel, vice president in charge of eastern territory; W. A. Ellsworth, assistant vice president in charge of engineering; C. W. Moberg, secretary; J. S. Holl, treasurer; J. W. Seeger, director and assistant treasurer; R. M. Reay, director and manager of commercial sales.

Jobber Meeting Plans Complete

CHICAGO—Leaders in the industry and in government agencies will address the annual convention of the National Refrigeration Supply Jobbers Association Nov. 19-22 at Edgewater Beach hotel here, and the members will also have closed business sessions, devoted to questions of industry and association policies.

Among the speakers at the general convention sessions are F. B. Millham, Deputy Chief of the Special Equipment Branch, General Industrial Equipment Division of WPB; A. B. Schellenberg, president, R.E.M.A.; and H. T. McDermott, secretary, R.S.E.S.

George F. Taubeneck, editor and publisher of AIR CONDITIONING & REFRIGERATION NEWS, will be the speaker at the informal dinner at 7 p.m. Tuesday, which will be open to all members of the industry.

Another event open to all who are interested is the luncheon at 12:15 p.m. Monday, Nov. 20, at which Albert Haring, Professor of Marketing at Indiana university and noted authority in his field, will discuss "The

(Concluded on Page 32, Column 2)

Nov. 15 Deadline For Display Case Makers

WASHINGTON, D. C. — Application for permission to make some of the 8,000 refrigerated display cases authorized for replacement purposes in the next 12-month period, must be made not later than Nov. 15, WPB announced last week.

Application must be made with the WPB field office in the area in which the plant is located. Applications will be considered regardless of whether the concern had or had not previously manufactured display cases.

Text giving details about methods of applying for permission to make such items was published in the last (Oct. 30) bulletin edition of AIR CONDITIONING & REFRIGERATION NEWS.

Brewer-Titchener Buys Green & Sons Assets

BINGHAMPTON, N. Y. — Plate Evaporator & Refrigeration Division of Robert M. Green & Sons, Inc., Binghampton, N. Y., has been taken over by the Brewer-Titchener Corp. of Cortland and Binghampton, N. Y.

The Brewer-Titchener Corp., it was announced, will carry on the business of the Plate Evaporator & Refrigeration Division, and will executive existing (accepted) orders taken in behalf of Robert M. Green & Sons, and will solicit new business.

The entire personnel of the refrigeration division of Robert M. Green & Sons will continue with the Brewer-Titchener Corp.

According to the announcement, the transfer includes, among other assets, all unfilled, accepted orders, and all counts receivable which relate to sales of evaporator plates, liners, water cooler lowsides, and other refrigeration products.

American Central Makes Admiral's Cabinets

CHICAGO—Cabinets for the household electric refrigerators which will be produced and sold postwar by Admiral Corp. will be made by American Central Mfg. Corp. of Connersville, Ind., according to an announcement made last week.

It is said that the initial order placed by Admiral with American Central is for 125,000 cabinets.

Marshall Field Co. Joins With A. M. C. Appliance Group

CHICAGO—Marshall Field & Co. of Chicago and the Fredrick Nelson Co. of Seattle, a totally owned subsidiary of Marshall Field, have joined the Associated Merchandising Corp. (A.M.C.) Major Appliance Group.

This announcement was made jointly last week by William Street, general manager of the Chicago department store; and Joseph P. Kasper, director president of A.M.C.

The announcement stated that the joining of the group by Marshall Field & Co. is only the beginning of a big program on the part of A.M.C. to expand both private brand and national brand activities in the electrical appliance field. It is said that a number of other stores across the

(Concluded on Page 32, Column 1)

Part Costs Key To Refrigerator Price, Say Industry Men

WASHINGTON, D. C.—Prices that household refrigerator manufacturers will have to pay during reconversion and after for component parts are the chief price problems facing the industry, officials of the OPA were informed when OPA's domestic mechanical refrigerator industry advisory committee held its first meeting here recently.

After electing Paul Jones of Philco Corp. as chairman, the committee discussed at some length the wholesale and retail pricing regulation MPR 110 and other orders, but not too much emphasis was placed on reconversion problems. The committee declared that while reconversion planning is going on, actual reconversion is still too far in the future to present immediate problems.

The question of components is to receive considerable study, the committee indicated, and to this end the group selected several to contact suppliers to learn what prices are likely to be.

Chester Bowles, OPA administrator, outlined OPA's pricing policy and reviewed the memorandum he recently sent to all industry committee members.

Rasmussen Directs Crosley Corp. Sales

CINCINNATI — Appointment of James H. Rasmussen as general sales manager of the manufacturing division of The Crosley Corp. was announced last week by R. C. Cosgrove, vice president and general manager of the Crosley manufacturing division. He will have the responsibility for all sales activities of the manufacturing division, Mr. Cosgrove announced.

Mr. Rasmussen has been with The Crosley Corp. since 1941 and had been commercial manager of the manufacturing division before his promotion to his present post.

Marshall Gets New Post At Wolverine

DETROIT—John A. Marshall has been appointed assistant to the general sales manager of Wolverine Tube Division, Calumet & Hecla Copper Co., it was announced last week by H. Y. Bassett, general manager.

Mr. Marshall has been connected with the advertising, sales promotion, and sales departments since 1937 when he came to Wolverine. He will continue to supervise the advertising department in addition to his new duties.

Industry Firms Who Got 'Spot' OK Are Named

For Most Part Smaller Firms Who Will Make Freezers, Store Fixtures

WASHINGTON, D. C.—As of Oct. 24, 19 firms in the refrigeration industry had been given spot authorizations by local War Production Board offices to manufacture limited quantities of commercial refrigeration equipment.

With two or three exceptions, however, the firms are small manufacturers, producing more or less for local markets.

Preponderance of authorizations under Limitation Order L-38 (Industrial and Commercial Refrigeration and Air Conditioning Machinery) is for farm freezers, although the list does include display cases, reach-in refrigerators, and walk-in coolers. Two authorizations have also been made for milk coolers under Order L-257 (Farm Machinery).

List of firms and products they have been authorized to manufacture follows:

L-38—Industrial and Commercial Refrigeration and Air Conditioning

Memphis War Industries, Memphis, Tenn.—freezing and air conditioning equipment.

Bursch & Co., Harrisburg, Pa.—farm freezers.

Babrens Fixture Co., Denver, Colo.—freezing equipment.

Emil Steinhorst & Sons, Inc., Utica, N. Y.—farm freezers.

Radford Appliance & Supply Co., New Orleans, La.—walk-in cooler boxes.

Central Supply Co., Indianapolis—farm freezer boxes (for frozen foods).

Thomas H. Bentley Co., Milwaukee—home freezers.

Vita-Freez, Inc., Memphis, Tenn.—freezing equipment.

Viking Refrigerators, Inc., Kansas City, Mo.—display cases, vegetable cases, and beverage coolers.

The Warren Co., Inc., Atlanta, Ga.—refrigerated display and storage cases.

Kay-Zee Mfg. Co., Cleveland—non-mechanical water coolers, commercial.

Alabama Fixture & Refrigeration Co., Birmingham, Ala.—walk-in coolers and reach-in refrigerators.

Hicks Refrigeration Service, Raleigh, N. C.—walk-in refrigerators.

The Sentinel Mfg. Co., Cario, Ill.—frozen food display cases, freezers (food storage).

S. Birkenwald Co., Portland, Ore.—refrigerated display cases.

W. Erspamer & E. Varnum, Tacoma, Wash.—farm freezers.

Hil-Lor Mfg. Co., Harvey, Ill.—electric humidifiers.

Refrigeration Corp. of America, New York City—farm freezers, etc.

H. Ehrlich & Sons Mfg. Co., St. Joseph, Mo.—display cases, reach-in refrigerators.

L-257—Farm Machinery

Emil Steinhorst & Sons, Inc., Utica, N. Y—Immersion type milk coolers and farm milk coolers.

Thomas H. Bentley Co., Milwaukee, Wis.—milk coolers.

NOTICE

In order to complete some bound volumes of Air Conditioning & Refrigeration News, we need several copies of the Sept. 20, 1943, "Bulletin" issue. To any subscriber who will send us his copy of that issue, we'll gladly pay the full price (20¢) plus his postage costs in token of our gratitude.

Blood of Norge Asks 'Restoration of Historic Profit Margins' by OPA

Attacks Reconversion Price Control Planning; N.A.M. Told of Likely Consumer Credit Changes

NEW YORK CITY — Restoration of historic profit margins as the basis for OPA's reconversion price policies was urged in an address here by Howard E. Blood, president of Norge division, Borg-Warner Corp., and chairman of the distribution committee of the National Association of Manufacturers, who scored use of the 1942 base in reconversion pricing for durable goods, as recently suggested by Price Administrator Chester Bowles.

Blood's address was one of the features of a two-day marketing conference conducted here Oct. 23-24 at the Waldorf-Astoria Hotel by the U. S. Chamber of Commerce.

'Profit Control, Not Price Control' He Charges

Warning that "continued failure of OPA to get down to price control instead of profit control may seriously delay maximum employment after V-E day," Blood declared:

"Even pressure from an enlightened congress has failed to correct in OPA a dangerous misconception of its function. Their actions prove they still believe they should not only protect the country from unnecessary prices but should squeeze the unit profit structures and should set individual prices even at the no profit level whenever manufacturers' overall profit position would, in the judgment of OPA, make that endurable."

Deputy OPA Administrator James G. Rogers restated the OPA objective of 1942 prices for reconverted durable goods production. While OPA recognizes there have been increases in wage rates and some increases in material costs, he said it would seem reasonable that gains in productivity would be an important factor in offsetting these increases.

"Our policy, therefore," Rogers said, "will require a certain amount of absorption of cost increases, recognizing, of course, the necessity for having prices which are generally fair and equitable and which, therefore, must reflect at the very least peacetime profits. Our program involves meeting with representatives of the industries which manufacture the two dozen major durable goods items. We will discuss with them their costs increases and arrive at a price as near to the 1942 price as possible.

"OPA," he said, "has a fine line to draw between a weak price policy, which could easily result in an inflationary spiral and a rigid policy which could stifle production."

When in the final reconversion phase the supply of commodities approaches the demand, he said, then OPA's job will be to "wrap up price controls and put them away in an orderly, efficient, and prompt manner."

Robert M. Adair, past president of the Wholesale Dry Goods Institute and president of Jones, Witter & Co., Columbus, Ohio, apparently envisioning price control extension beyond the reconversion period, suggested that "it might be well for us to place floors here and there throughout our economic structure to prevent a disastrous drop of all of us into the economic cellar."

Concessions to Large Buyers Attacked

"It is true that this phase of an over-all price control program may seem less vital in these days of acute shortage of consumer goods," he said, "but when the time of over-production returns, when our greatly expanded production loses its greatest customer, and the need for production for war and lend-lease purposes ceases, this matter of price discrimination will loom larger than ever before."

Adair also asserted that "inordinate and uneconomic concessions" granted in the merchandising field to large buyers were hindering "free and fair competition" among these buyers and the 91% of all retail establishments which he placed in the small business category. He advocated that sellers in interstate commerce be required to name a price and make it known to all customers, "changing the price at will but notifying all buyers of the changed value," thereby giving an equal opportunity to purchase at the new price.

Policy on Surplus Disposal Questioned

As one of the speakers during discussion of the surplus goods problem, H. Earl Puckett, vice chairman of the board, American Retail Federation, and president of Allied Stores Corp., asserted he was in "complete disagreement" with "retailers who say that only those retailers who have been in business as of a certain date should be permitted to buy surplus goods."

Declaring that proposals to bar sales to speculators might be too rigidly construed, he asked: "What is a speculator? When is he one—are not some business men speculators?" The only protection we need, he argued is from unfair and subsidized competition.

Puckett declared that obstacles to the release of government-owned surpluses at "ever-increasing" speeds must be brushed aside so that distributive channels can reach and maintain the high levels of operation required to handle the volume of production necessary for postwar prosperity.

"No group," he asserted, "has any vested right to any market that might absorb these surpluses and any compromise with such 'rights' will lead straight to calamity."

Sees Chance for Dip In Credit Rates

Discussion of consumer credit brought a prediction from Mark A. Brown, vice president of Harris Trust & Savings Bank, Chicago, that competition between finance companies and the nation's banks, 95% of which expect to engage in financing consumer purchases after the war, will bring consumer credit rates down to a point far below prewar rates.

K. R. Cravens, chairman of the American Bankers Association's consumer credit committee and vice president, Mercantile-Commerce Bank & Trust Co., St. Louis, gave a similar forecast. He further declared that consumer credit demand would not be dampened by the fact that individuals' liquid assets amount to twice their holdings at the end of 1940. A large percentage of these savings, he predicted, would be held "for a rainy day," used in satisfying pentup demand for soft goods, personal services, and travel as well as on equity payments on residential property and heavy consumer goods.

Others Doubt Great Credit Policy Change

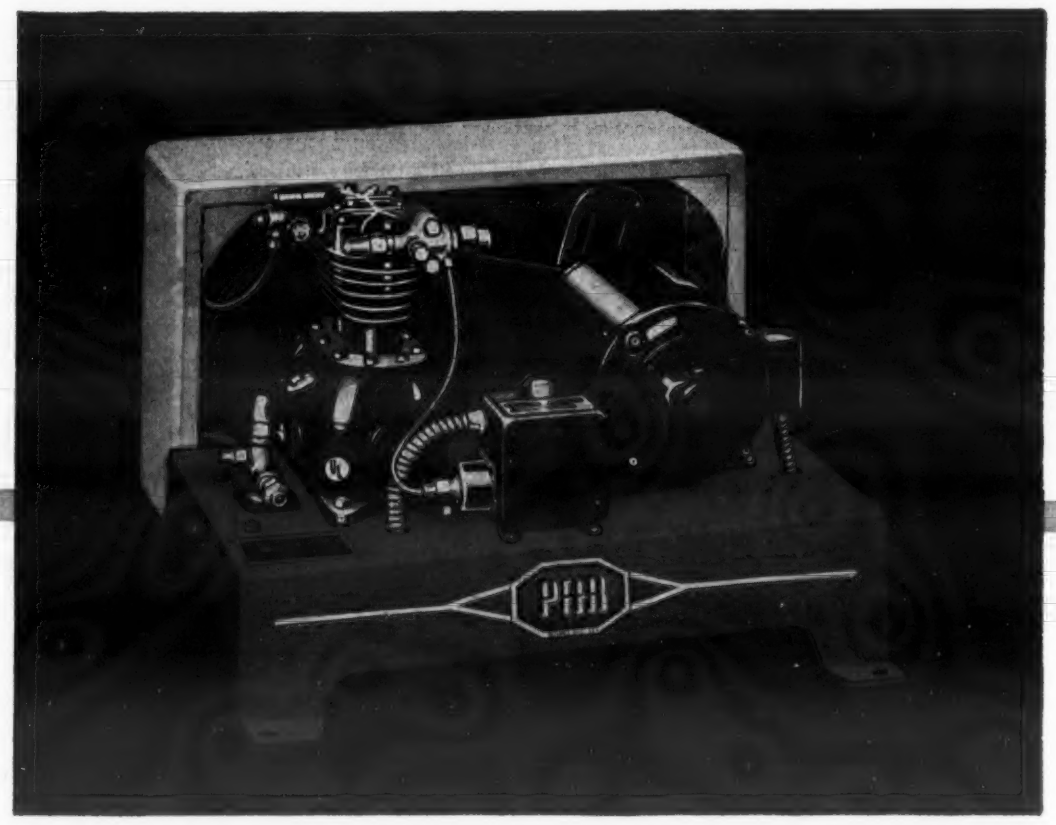
Although these large accumulated savings in a period of limited supply of consumer durable goods will at first reduce the demand for consumer credit to a low level, Cravens said, "consumer credit outstanding has always maintained about the same proportion, relatively, as our national income, showing that people were willing to buy and use their credit when they had confidence, and this confidence came from full pay envelopes."

Cravens doubted that competition would permit credit terms to "get out of hand and mire the nation in a colossal consumer credit debt," particularly if merchandise and not credit is sold. Larger banking activity in this field, he said, would have a steadying influence on postwar terms.

Seek 'United Front' Against Credit Regulation

Urging consumers and business men to join banking in a united front against legislation designed to regulate credit, Cravens asserted that government control of credit would "ultimately mean the end of private enterprise." If a system of federal consumer credit controls is established by Congress after the war to replace Regulation W, he warned, it will only be a matter of time until commercial and other types of credit are likewise regulated.

Kenneth C. Richmond, vice president and treasurer of Abraham & Straus, Inc., declared that consumer credit is "a first-class selling tool to accomplish the retailing of 60% more goods than were sold before the war." He emphasized that this must be done year in and year out to reach full employment.



Par Model HA-2

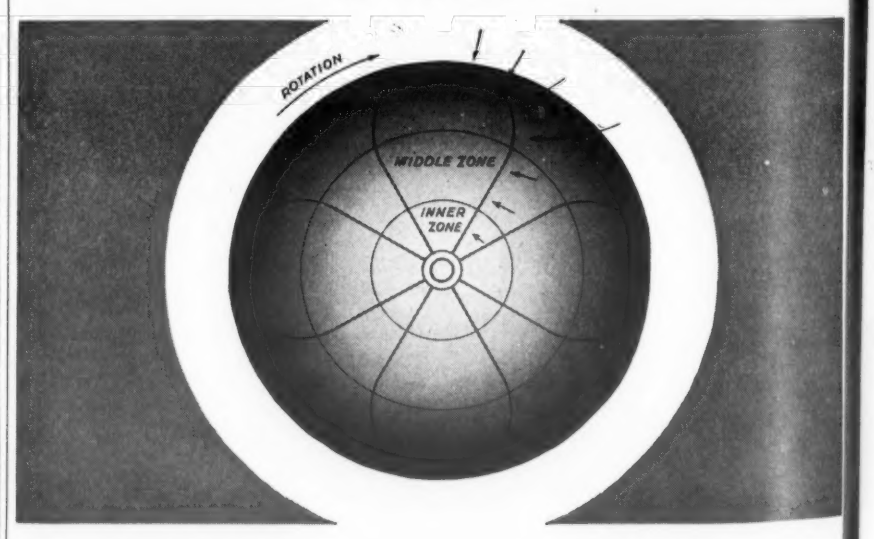
- Fits like a glove . . . engineered and designed for small display cases and large domestic applications.
- A sturdy ¼ H.P. 2 cylinder air cooled unit with large condenser and bull's-eye sight oil gauge.
- Embodies the 28 PAR features . . . slow speed . . . and fast pump down.
- *Write for illustrated brochure of details.*
- *BY COMPARISON—YOU'LL BUY PAR.*

PAR Division

LYNCH MANUFACTURING CORPORATION
Defiance, Ohio, U.S.A.

Tips for Designing Air Impelling Units

No. 11 of a series



The Working Area of a PROPELLER FAN BLADE

DIVIDING the disc area of a propeller fan into three zones of equal width, as illustrated, the portions of the blades in the inner, middle, and outer zones will produce approximately 4%, 25% and 71%, respectively, of the total air delivered, varying somewhat with blade design. While revolutions are constant for all portions of the blade, speed of any portion of the blade increases with its distance from the center (speed at any point in the blade = 2π R x RPM of fan where R is distance from the point to the center of the fan disc).

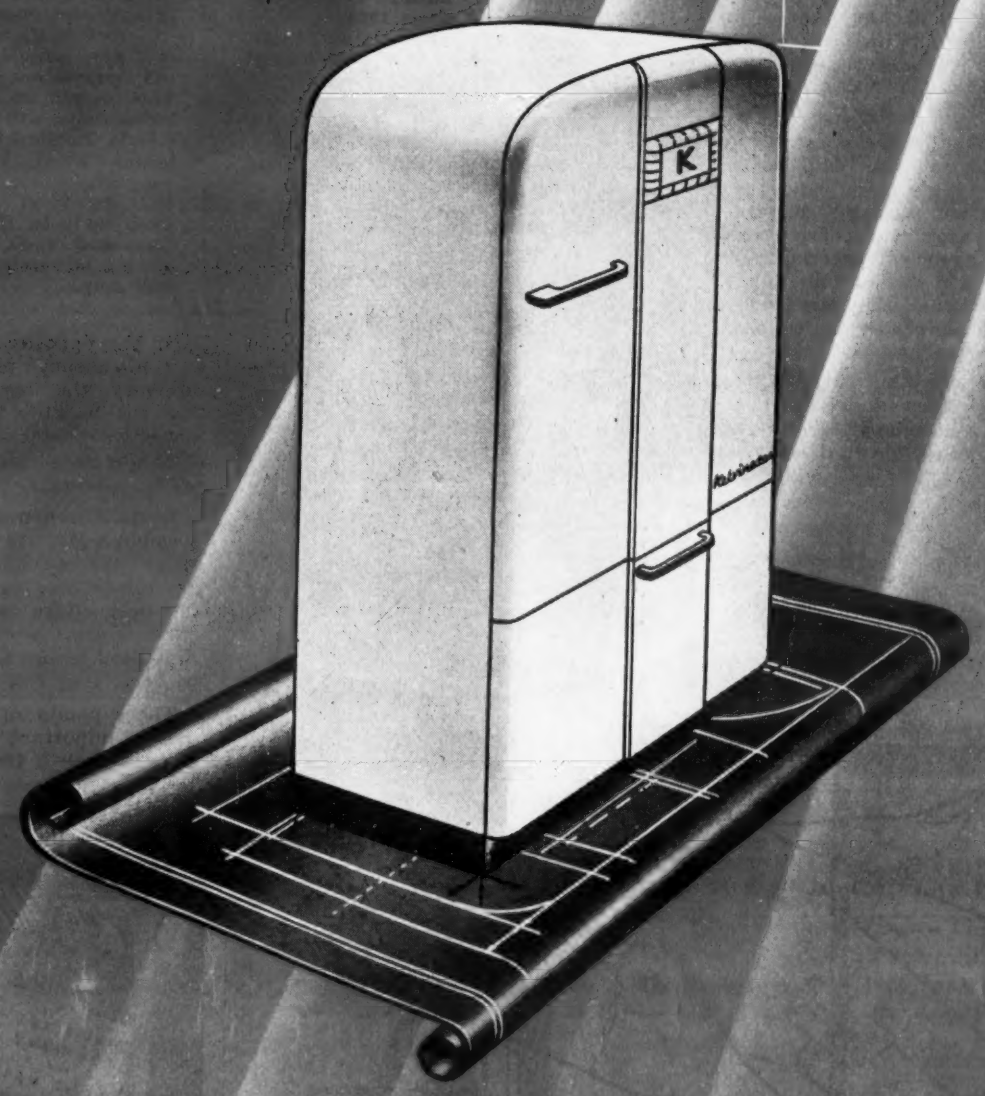
Proportions of work done by each zone will vary in tests made under the two standard codes—NEMA for free air and NAFM for pressure operation. The reason for this is that under NEMA code more air is drawn into the outer zone from beyond the fan's periphery than is possible under NAFM code where the fan is placed in a duct or orifice. (In illustration arrows indicate in-flowing air.)

By consulting us in the early stages of design of a unit using an air impeller you may save costly design changes and consequent delays. There is no obligation.

THE TORRINGTON MANUFACTURING CO. TORRINGTON, CONN.

Manufacturers of AIRistocrat Quiet Propeller Fan Blades & AIRotor Blower Wheels

A GREAT NEW LINE OF REFRIGERATORS!



A most important answer to—WHAT'S AHEAD FOR KELVINATOR RETAILERS?

Here's what Kelvinator retailers can look forward to in the great postwar refrigerator market to come:

—In the first postwar models—to achieve maximum production as quickly as possible for Kelvinator retailers—there will be few changes. But these changes will be important ones . . . incorporating as many improvements for better food preservation as is possible in present cabinet styles.

—Later, a completely NEW postwar line of refrigerators incorporating a startling new conception of home refrigeration will be announced. Soundly engineered, brilliant new ideas in frozen storage facilities and high humidity cabinets can be expected.

In addition:

—A genuine Selective Dealer Policy that means *more sales and more profits per dealer.*

—A "retail-minded" merchandising program designed to give new impetus to Kelvinator's outstanding pre-war successes . . . a program to enable Kelvinator and Kelvinator retailers to work even closer together than ever before in attaining a common goal of *more sales per dealer.*

Here is the cornerstone in the Kelvinator retailer's great postwar opportunity to build a sound, highly profitable, long-term business future.

And remember . . . this same retailer will have in addition —the new Kelvinator Electric Ranges, the new Kelvinator Electric Water Heaters and the new Kelvinator Home Freezers. It means that the Kelvinator retailer will hold the most valuable franchise in the appliance industry.

LOOK AHEAD WITH KELVINATOR

DIVISION OF NASH-KELVINATOR CORPORATION

Kenosha • Milwaukee • DETROIT • Grand Rapids • Lansing

The Building Industry's Postwar Plans Look Forward to Complete Homes With Major Appliances Installed, Myers Tells the Boston Conference

But Real Test of the 'One Million Homes a Year' Forecast Will Come When Normal Buyer's Market Returns, He Warns

By Ross Potter

BOSTON — "The first big, new housing presentation after the war will be the complete home, with refrigerator, range, and washing machine all included in the mortgage," Howard Myers, editor of *Architectural Forum*, told the Boston Conference on Distribution, at its sixteenth convention here Oct. 16.

These appliances have become necessities in our standard of living, he said, and as such are as much a part of the home as the roof overhead.

The real test as to whether the building industry can hit the one million homes a year promised by so many optimistic field economists, he warned, will come when our national economy has reached the turn from the present predominant seller's market to the usual peacetime conditions when the buyer's market prevails.

That is when the pressure will be felt in the building industry to make a home that is superior in design to those built before the war, to build homes completely equipped and set in the sort of landscaping and protected neighborhoods that all of us hope for in the home we will own.

Prices may run high during the transitional postwar period, he admitted, but when this market arrives competition will bring them down to practical levels. Unless the building industry is able to work toward that end, we will never see an era of one million homes a year.

There are substantial obstacles to such a program, Mr. Myers confessed. It has never been done before. Only twice in our history have more than one million single-family homes been built even in two years. The first obstacle is one of precedent alone, and big business has been out of practice in this industry since its last big year—1925.

Immediate obstacles include the various government regulations and controls, which will have to be broken down through strong and persistent argument before the government agencies exercising these controls, and who will surrender them only when they are convinced that such surrender is overwhelmingly for the better.

Farther away but eventually more serious, he believed, are the obstacles promised by the hostility and distrust between production and labor.

The basic difference of opinion between the two is one of hourly rates. The construction worker is paid a high hourly rate, but his annual income still ends up relatively small, the unions point out.

The logical solution is a guaranteed minimum annual wage, to allow lowering of the hourly rate, and high house costs with it, without jeopardizing the worker's standard of living. But so far, he asked, who has worked out a foundation of mutual confidence upon which such an agreement could be built?

Other collusive practices bear in, he added, going all the way from obsolete building codes to a habit of mind within the industry itself that has frozen out the technological advances found in the automotive and airplane industries. These must be met, one at a time and in turn.

A final obstacle, and one coming from the opposite direction, will be a complacency among those who prophesy the big building figures that the boom is going to be automatic, with not much planning necessary for any sustained period of active building.

A million homes a year may be possible, Mr. Myers agreed, but under no circumstances will the process be spontaneous. It will take the best effort ever called for, the most tireless work and inspiration. A million homes a year will not just be born; they will have to be made.

Those points sum up probably the most important forces working against such a tremendous program, he said. And yet all these are not entirely convincing in the face of the facts that favor its achievement.

First of all, the measurable immediate needs of the nation for new housing, compounded of delayed building during the war years, the growth of new families, the rapid obsolescence of substandard housing that has been built, and the movements of population toward war industries, not all of whom are going to move back home again as soon as the war is over.

The growth of modern, functionally designed buildings, spurred by the expansion of war production also will have its effect on home building design, he prophesied. It has taken literally half a century for modern design to pass successively through experimental stages and disrupted trends into presently accepted ways of building.

But progress has been made, and being here will not go entirely unrecognized, he said. Public education inevitably will discuss and emphasize better living and better working conditions. And building itself is a contagious activity. Once begun, it will take.

Finally, he pointed out, the national purse is bulging with cash and credit. Mortgage financing has been streamlined. The GI bill, even with its inelastic limitations, will at least stir up desires to build in the minds of returning servicemen.

The sum total of these figures, he added up, is a fairly definite, conservative estimate of 12 million houses needed by 1955.

One million homes will not come in the first year, Mr. Myers warned. The building figure during the first year after victory in Europe probably will not exceed 400,00 homes. Reconversion needs, distribution problems, and shortages in lumber and other materials will not be solved in just a few months.

But if the Asiatic war were to end within that 12 months, the year after that could easily break all previous records in home building. And no authority, he stated, places the employment total necessary to this building goal at less than 5 million men.

What about prefabricated homes, came a question from the floor.

They're undeniably on the way, Mr. Myers answered. Britain already has set up production plans for 500,000 mass-produced houses after the war. Russia will go much farther than that. For us, we will hit full stride in prefabricated homes probably within five years after the war.

Everyone agrees that building costs are too high, he agreed. The number of parts needed, the fear of weather's costly delays, can be cut drastically, he concluded. And in the postwar world, that progress is inevitable.

'One Million Homes a Year'

Obstacles

1. **Precedent—it's never been done before, it hasn't even been approached since 1925.**
2. **Government controls and regulations, to be surrendered slowly.**
3. **Hostility between production and labor over high hourly rates vs. low annual income.**
4. **Obsolete building codes and other local institutionalism.**
5. **The building industry itself—a frozen technological attitude.**
6. **Overcomplacency—"it's in the bag."**

Favorables

1. **Immediate housing needs:**
   - **(a) war delays in construction**
   - **(b) obsolescence of old and makeshift new homes**
   - **(c) new families**
   - **(d) population shifts**
2. **The growth of modern design industrially will affect housing trends. Public education toward better living conditions will support.**
3. **Building itself is contagious—keep up with the Jones's.**
4. **Cash and credit are high, mortgaging streamlined, the GI bill will help.**

A Touch of Style

WITH A SELLING PUNCH!

AS between a functional improvement, and a betterment in appearance, the latter will frequently make the most sales.

That is especially true where the buyer is a woman with a keen esthetic sense.

Important refrigerator makers are planning to take advantage of this opportunity for more sales by equipping their new boxes with Formica breaker strips and door-backs in color.

The colors can be neutral to harmonize with any color scheme. They may be cool colors, harmonizing with the refrigerator's purpose.

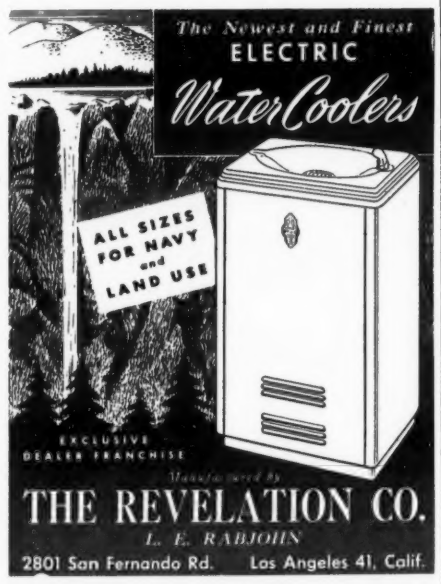
These strips add a touch of sales making color but they do not subtract any practical advantage. They provide an efficient thermal break. They will stand as much washing and cleaning as any material. They are installed exactly as your present strips are installed.

Why not have this feature on your next model?

ARMY E NAVY

FORMICA

THE FORMICA INSULATION COMPANY, 4618 SPRING GROVE AVENUE, CINCINNATI 32, OHIO



WEBER first

IN PEACE...WAR...POST-WAR

Commercial Refrigeration, Soda Fountains, Ice Cream and Frosted Food Cabinets

★

Investigate the country's most complete line of *commercial refrigerators, soda fountains* and Ice Cream and Frosted Food Cabinets before you make any post-war sales plans.

PLAN NOW TO SELL THE WEBER LINE INSTEAD OF SELLING AGAINST IT

Write today for data concerning the details of Weber distributorships. This franchise will make real money for those concerns who can qualify.

★

WEBER SHOWCASE & FIXTURE CO. INC.

5700 AVALON BOULEVARD • LOS ANGELES, CALIFORNIA

How Roast No. 179 will help Frigidaire Dealers sell more and better Home Freezers

FREEZING, thawing, cooking, taste-testing—they're all parts of the extensive Frozen Food Research Program that Frigidaire has been conducting for more than two years. To improve present products . . . to develop new ones in the home freezer field . . . to develop more effective techniques for preparing food for freezing, for freezing food, for cooking frozen food...to further the popularity of frozen food storage—these are just a few of the reasons why Frigidaire is engaged in this great research program.

From continuing research like this are coming the product advantages and sales knowledge that will make it possible for Frigidaire Dealers to capture a major part of the big postwar home freezer market. Since 1942 alone, nearly 200 separate projects have been put "in work" —more than 2,600 individual tests made.

As a result of this intensive program, Frigidaire already has important answers to such basic questions as:

How should various foods—meats, vegetables, fruits, etc.—be prepared for freezing?

How should foods be wrapped, or what kind of containers used, for frozen storage?

What temperature is best for freezing foods? What temperature is best for storing frozen foods?

What varieties of fruits and vegetables are most satisfactory for frozen storage?

How does frozen storage compare with other food-preserving methods as to: Appearance? Flavor?

What features will make home freezers even more convenient and salable?

Frigidaire has answers to many important questions like these, is learning the answers to many more, as the result of constant experimentation in its own Home Economics Research Laboratory . . . field surveys among users and prospective users of all types of frozen storage equipment . . . cooperation with large food processors, universities, Government agencies, and others engaged in frozen food experimental work.

Frigidaire Dealers have already benefited from this research work. An authoritative instruction booklet, *How to Freeze and Store Foods,* and a practical Frozen Food Packaging Kit—both developed out of Frigidaire Research—have won Frigidaire Dealers valuable goodwill and recognition in the home freezer market.

But the greatest benefits of Frigidaire's present Frozen Food Storage Research are yet to come —when the findings of this program are translated into new and improved Home Freezers . . . and Selling Plans for Frigidaire Dealers!

Frozen Food Research: One more reason why the Frigidaire Franchise is prized so highly . . . one more evidence of how thoroughly Frigidaire shares in General Motors' forward-looking policy of:

"Finding out what people LIKE —and doing MORE of it.

"Finding out what they DON'T LIKE —and doing LESS of it."

Listen to
GENERAL MOTORS SYMPHONY OF THE AIR
Every Sunday Afternoon, NBC Network

BUY AND KEEP MORE WAR BONDS

For Excellence in War Production

FRIGIDAIRE
Division of
GENERAL MOTORS

DAYTON 1, OHIO • LEASIDE 12, ONTARIO

Peacetime builders of

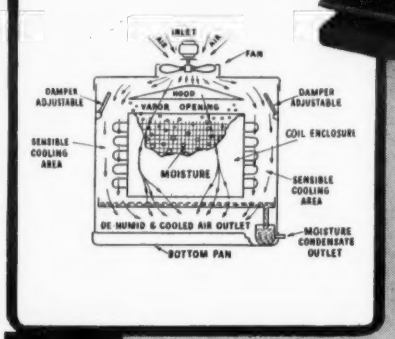
ELECTRIC REFRIGERATORS • RANGES • WATER HEATERS
HOME FREEZERS • ICE CREAM CABINETS
COMMERCIAL REFRIGERATION • AIR CONDITIONERS
BEVERAGE, MILK, AND WATER COOLERS

DISTRIBUTORS ACT TODAY BIG PROFITS

AMCOIL "COMFORTAIRE" CONDITIONER

—the sensational NEW development in air-conditioning equipment!

LICENSED UNDER Carrier Cooler Patents
Patent Pending



Brings Low-Cost Dehumidification To These Industries:

PARACHUTE STORAGE
CANDY STORAGE
DRAFTING AND INSTRUMENT ASSEMBLY ROOMS
PAINT SPRAY DRYING ROOMS
TEXTILE, RAYON, NYLON AND SILK INDUSTRIES
PRINTING PLANTS AND PAPER STORAGE
LABORATORIES, ETC.

ALSO—many other industrial applications. It may be used as a liquid and water reclaimer in aircraft, ships, lifeboats.

Each *"Comfortaire"* model is *completely automatic* and, when connected to water cooled condensing units, removes moisture or latent heat without too much change in temperature. This is made possible because *recirculated air while passing through the "Comfortaire" does not come into contact with the cooling coil* (see sketch).

That's why dehumidification takes place without appreciable loss in temperature . . . why this new AMCOIL unit creates dry, healthful, non-shock comfort at half of the operating cost of expensive re-heat systems. The *"Comfortaire"* is available in two, completely automatic, wall mounted models.

EASY TO SELL . IMMEDIATE DELIVERIES

DEALERS Immediate Shipment Now From Local Jobbers Or Direct From Us

NEW
ALSERVICE REACH-IN COOLING UNIT
Now Ready for Delivery
Model RI-40-4600 BTU Capacity
Model RI-45-5500 BTU Capacity
Finished in White Enamel & Black

AMCOIL FOOD CONDITIONER. A wall mounted unit combining high, controlled humidities up to 85% with temperatures of from 35° to 40° F. Designed for walk-in boxes it *automatically* preserves foods without dehydration. Can be used effectively to store meats, fruits and vegetables, butter, cheese, eggs, flowers, bakers and confectioners products, to retard dough, etc.

AMCOIL ALSERVICE OPEN FACE COOLING UNIT. Is designed for efficient cooling and serves as a general utility unit in preserving foods and other commodities where a forced draft cooling unit is required. Streamlined design, in attractive grey and black color scheme, it can produce temperatures down to 34° F.

ZERO BREEZE LOW TEMP UNIT. A low temperature unit equipped with automatic electric defrost . . . wall-hanging model . . . produces temperatures from +20° F to —20° F . . . defrosts automatically on each off-cycle.

AMCOIL
AMERICAN COILS CO.
25-27 LEXINGTON STREET • NEWARK, 5 N. J.

EXPORT DEPT., 13 East 40th Street, New York 16, N. Y., U. S. A. • Cables "ARLAB" N. Y.

MANUFACTURER'S REPRESENTATIVES

P. J. Burrill, 800 N. Clark Street, Chicago, Ill. • Frank M. Eversden & Associates, 220 South 16th Street, Philadelphia 2, Penna. • Richard Barthelmess Sales Co., 1711 Challen Avenue, Jacksonville 5, Fla. J. E. Oliphant & Co., 505 Uhler Building, Marion, O. • John J. Madden, 212 Madison Street, Dedham, Mass.

OST 7067

Inside Dope

By George F. Taubeneck

(Continued from Page 1, Column 1)

while applying only to specific buildings, determines the minimum of electrical appliances at the point of installation, and ranks next to favorable rates as a market influence.

Unlike electric refrigerators, food mixers, and other socket appliances which are affected only slightly by rates, the range presents a highly specialized problem to commercial marketing. This problem is directly concerned with basic public utility operating policies, transportation of solid fuel, laws of the several states regarding trade practices, "combination utilities" which have large gas property investments as well as electric operations, and several other fundamental economic factors which definitely remove the range from the class of "plug-in" appliances requiring only a convenient outlet.

By 1941 there were 25 million electric meters, and 24 million (96%) had rates favorable for electric ranges. Three cents a kwh. is considered favorable, and the 1941 national average was 2.2 cents per kwh.

However, there are rates as low as 1 cent per kwh., so even though the utility industry has recognized the revenue value of this major appliance, market studies become more complicated because some rates are more "favorable" than others.

The rapidly shifting scene as regards to the nation's basic domestic electric rates has caused manifold complexities. For example, each of the several hundred operating utilities across the nation has its own rate and operating policy. However, each does not necessarily serve an identifiable geographic area. While rates and service conditions are widely different, they are invariably determined by public bodies. And though they change, lower rates do not always mean a ready market for the appliance benefitted.

Adequate wiring for ranges costs as much as $50.00 per dwelling. This places an obstacle in the way of distributors and dealers. The expense may be shared by the local utility company, paid in full by the utility, or shouldered entirely by the customer.

The range distributor may cover a territory embracing a dozen utility companies, with a wide variety of rates and policies. His salesmen may work untiringly, but unless complete information, broken down by towns and counties, is available, the distributor's men are unable to determine whether they are doing a good job or not.

Suppose the distributor's biggest city is served by a "combination" utility, serving both gas and electricity. The gas is installed for cooking and water heating; electricity is there for lighting and "plug-in" appliances. The utility needs its present gas load to retain the value of that property; hence, the distributor must find strong, independent dealers to sell ranges and water heaters because the utility does not promote the use of electricity where it would detract from the gas load.

A special factor bearing on the market potential of ranges is the effect of the limited type of water heating rates in some places. For example: a company allows a six hour "off-peak" charging period on the low water heating rate, after which the higher rate applies.

This naturally curtails water heater sales; but it also affects range sales, since the volume required to earn low rates for gas water heating requires the addition of a cooking load. Distributors must be supplied with evaluations as to the effect these varying limited-rate properties have on the sales potential for both ranges and water heaters.

One highly favorable factor is that all changes in electric rates which affect ranges (and water heaters) invariably are reductions. Another favorable condition is that new buildings are being equipped with adequate wiring in ever-increasing numbers. These conditions make the outlook bright.

Refrigerators and washing machines are generally considered the giants of the home appliance industry, and as such generally receive the most attention, the heaviest promotion, the largest display, and the most effective selling.

But in recent years, the electric range has stepped up into the higher volume brackets, and now demands the most thoughtful treatment by all appliance dealers.

One should note that the combined sales of gas and electric ranges run well over the million mark annually, and that the electric range is gaining steadily on the gas range. Ten years ago at least 10 gas ranges were sold for every electric range; just before the war the figure was closer to 3½ to 1.

For a long time the electric range was held back because of the product. Housewives said it was "slow." And even after the product was improved, so that it compared favorably in speed with the undeniably efficient gas range, that "too slow" impression was hard to eradicate. Manufacturers were stymied with small volumes, and felt they could not afford to give the improved electric range the promotion it deserved.

There was another obstacle. Ranges had always been sold chiefly by the utilities, which had been accustomed to selling ranges at comparatively low prices, and on small margins. Being quite a juice-eater, the range was sold primarily because it would burn electric current; and even if it moved at little or no profit, the utility was more than satisfied.

Now specialty selling requires relatively long margins. Promotion is expensive; so are specialty salesmen. Margins had to be upped. All this took quite a bit of wangling; but higher prices have been justified on the basis of added convenience features.

Noting the success of their competitors with the electric range, appliance dealers who had been specializing on refrigerators began to look around for ranges, too. Word of this began to get back to headquarters of the refrigerator manufacturers. And now most of them will be producing ranges for their dealers.

As a result of all this activity, an exceedingly bright future can be predicted for electric range volume. Specialty selling thrives on competition. Saturation of the market is ridiculously low. And the market is tremendously improved.

* * *

Sales Appeals

Leading sales appeals on the range include cleanliness, economy of operation, convenience, better cooking results, and special features. Cool cooking is stressed more and more (this sales argument justifies Frigidaire in applying its refrigeration name to its range). Conserving a woman's beauty by means of electric cooking is often found a more potent sales appeal than the standard suggestion of saving her time.

The range has definitely become a big-time appliance, and seems destined to become a more and more important part of the specialty selling picture. It deserves the best thought and efforts of every dealer.

(Concluded on Page 7, Column 1)

THIRTEEN MILES ABOVE THE GROUND
or on Terra Firma...

—refrigeration is an important factor! Refrigeration makes it possible to bring the stratosphere right down into the laboratory, where testing chambers reproduce the pressure, temperature and humidity conditions of predetermined altitudes, without which the manufacture of many existing aircraft instruments and accessories would still be in the experimental stage.

Without modern commercial refrigeration, the annual spoilage of food would reach staggering proportions.

Just as Brunner condensing units are assisting in reproducing stratospheric conditions right here on terra firma, thus aiding in the production of vital aviation instruments and accessories, so are thousands of Brunner commercial units preserving our essential food supplies.

Many of the applications of Brunner refrigeration that are helping in the winning of the war, are teaching us lessons that will be applied to the best advantage in production of the most modern design of peacetime Brunner equipment.

Brunner engineers are experts in the application of commercial and industrial refrigeration. Why not consult them on your temperature or humidity problems?

BRUNNER MANUFACTURING COMPANY
UTICA 1, NEW YORK, U. S. A.

ARMY E NAVY
BRUNNER
For over 36 years the Symbol of Quality

Inside Dope

By George F. Taubeneck

(Concluded from Page 6, Column 5)

Westinghouse Survey

Reese Mills, assistant manager, appliance division, once made a survey of Westinghouse dealers who were doing both a satisfactory and profitable volume on ranges. He found that these dealers were:

(1) Established in handsome stores.

(2) Displaying the product, with especial emphasis on placing the range in its proper environment—a complete electric kitchen.

(3) Employing, training, and directing a crew of outside salesmen; and maintaining their morale with periodic sales meetings and contests.

(4) Teaching their salesmen to cook; and insisting on proper demonstration of the range.

(5) Calling back on the owner to see that the range was being used properly and effectively, and to secure new leads.

(6) Advertising the ranges well in local papers.

(7) Making mass demonstrations.

(8) Capitalizing on user satisfaction in various ingenious ways.

* * *

Selling the All-Electric Kitchen Step by Step

Merchandising theme which specialty selling outlets have employed so effectively to step up range sales is the all-electric kitchen. This idea sounds good to householders. Electricity means modernity. It means safety and cleanliness. And the manufacturers have helped these pride-of-possession ideas along by ensemble designing, which has turned the kitchen into the most modern and striking room of the house.

Kitchen planning came along, with experts who could show the housewife how to save steps and energy. These planned kitchens sold a lot of appliances — refrigerators, ranges, dishwashers, fans, radios, and small appliances. But for a while this market was limited to those of considerable means.

And then the indefatigable specialty dealers started to work selling all-electric kitchens on the chain plan—an appliance a year, just as bobby-soxers acquire charms for their bracelets. As soon as the payments on one appliance began to run out, they persuaded the home owner to install the next appliance (usually the range followed the refrigerator). This second appliance was matched in design with the first.

In easy steps, then, the prospect with moderate or small income could acquire a modern, step-and-labor-saving, economical, all-electric kitchen. The idea went over with a bang. And it provided the best merchandising stimulus electric ranges ever had.

At first range salesmen stressed the health and cleanliness aspects of electric cookery. These are said to be the most effective arguments. But not satisfied with dependence on these points, whole groups of these specialty salesmen learned how to cook well.

Taking a leaf from the home economists' notebook, top range salesmen are now able to make an electric cookery demonstration which will make a husband's mouth water, and stimulate the jaded palates of housewives—whose greatest single problem is something new to serve. Invariably such culinary demonstrations take a long first step toward a sale.

Specialty selling, and specialty salesmen, are hard to beat.

* * *

More on Future Taxes

In the last edition of "Inside Dope" we studied postwar tax prospects and plans at some length. That discussion was concluded with a presentation of the Ruml-Sonne plan which, in itself, cannot be considered as the sole guide to future taxation.

An opposite plan is that of the Twin Cities (St. Paul and Minneapolis). Business men in these two dynamic cities have worked out their own plan of tax reform, and it's not so dumb as some New Yorkers and Washingtonians might automatically think.

What these grass-roots business men aim for is elimination of tax deterrants on business expansion. They seek repeal of (1) the excess profits tax, (2) the capital stock tax, and (3) the admittedly ridiculous declared value excess profits tax.

They would further permit net operating loss deductions to be carried forward for each of five succeeding years, as well as allowing operating losses to be carried back for two preceding years.

Those who receive dividends, under the Twin Cities plan, would pay taxes only on 60% of their receipts, while the declaring corporation paid taxes on the remaining 40%.

Individual income taxes would then range from 1 to 65%. For small business concerns, the Twin Cities tax pioneers would grant these encouraging concessions: for corporate incomes up to $25,000, rates up to 31%; and for corporate incomes up to $50,000, a tax rate of an additional 22% (note the incentive to produce, grow, and profit more here). For those concerns earning above the $50,000 figure, they propose a normal tax of 24% and a surtax of 16%. See how they provide for the workings of ambition?

Twin Cities tax planners also propose a retail sales tax of 5% on all items. Should this tax be adopted, they say the maximum individual surtax rate could be lowered from 65 to 50%, and exemptions raised somewhat.

There seems to be increasing interest in the proposal to limit the powers of the federal government to tax incomes, estates, and gifts in times of peace to a maximum rate of 25%. To establish such a limit, a Constitutional amendment would be required. This amendment is gathering strength throughout state legislature approvals.

There is no magic quality in the precise figure of 25%. Underlying principle is that a limit on the power of the federal government to tax incomes, estates, and gifts might well contribute to the fairness, productivity, and stability of our revenue system, and strengthen the foundations of our industrial structure.

Since 1936, 16 states have passed resolutions asking congress to call a convention of representatives of the several states to consider this proposed amendment. This is half the number of states required to invoke mandatory action by congress. In several other states, resolutions proposing participation in the movement are under consideration.

In 1926 the maximum rate on individual income was reduced from 46 to 25%, and in 1929 it was further lowered to 24%. Taxes paid by individuals for each of the years 1927, 1928, and 1929, under the reduced rates, were greater than the total for 1942, when higher rates prevailed. Under Roosevelt, a drastically increased schedule of income tax rates became effective in 1933, and another in 1937, which was succeeded by the much higher wartime rates now in effect.

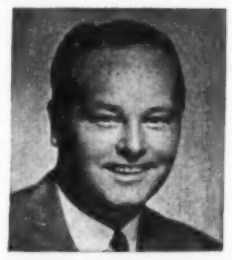
Proponents of this 25%-limit amendment contend that undue tax concentration on the middle and higher brackets of income is objectionable not merely because it involves an unfair distribution of tax burdens, but because it also destroys the incentive to produce, and dries up the sources of capital for investment.

A large part of the new capital flowing into business is normally derived from the undistributed earnings of corporations. Exhorbitent rates on corporate earnings restrict dangerously the accumulation of these funds.

An especially promising feature of the suggested 25% tax limit is the greater assurance of stability that it would foster. Sound business management involves a large amount of forward planning, and a ready flow of capital into investment channels requires confidence in both the business and—particularly these days—the tax outlook. Wide variations in income tax rates and the possibility of further broad fluctuations, have certainly interfered with business plans and restricted the movement of capital into productive enterprises.

A complete remodelling program for the radio and appliance store of tomorrow

Prepared under the supervision of George W. Walker, nationally famous industrial designer



It's ready for you now . . . FLEX-O-PLAN by Admiral . . . a 48 page book of remodelling ideas for the radio and appliance store of tomorrow. In it you will find basic, over-all store plans attractively illustrated in full color and complete with detailed blueprints that can readily be adapted to any size or shape of store. Other pages present designs for a model kitchen, model laundry, self-service record department, back-ground fixtures, etc.; each complete with essential construction data.

To the successful radio and appliance dealer, showmanship is an essential part of his business. Your store is a stage . . . your customers the audience. To help set the stage for successful post-war sales, Admiral presents FLEX-O-PLAN. If you previously reserved a copy, don't bother to write again . . . it will be delivered to you shortly. If you haven't written and would like a copy of FLEX-O-PLAN, simply address your request to

Admiral Corporation. CHICAGO 47, ILLINOIS
World's Largest Manufacturer of Radio-Phonographs with Automatic Record Changers
Leaders in Radio—F M—Television Communications Equipment—Radar

Guy Henry Is Notified of a Job Well Done

When the Henry Valve Co. and its employes were presented with the Army-Navy "E" flag on Oct. 19 it was said to be the second time that a firm in the refrigeration industry producing non-armament equipment was so honored. The original citation to Henry Valve, which Guy Henry holds in this picture, was made by the Refrigeration Section of the Bureau of Ships, U. S. Navy.

Plentiful Metal Supply Seen After 'V-E' Day

WASHINGTON, D. C.—Production of steel, copper, and aluminum for civilians in the year following the defeat of Germany may break all records, exceeding even the previous high year of 1937, predicts Hiland G. Batcheller, chief of operations of the War Production Board.

Available "almost overnight" after V-E Day will be a yearly production of 41,000,000 tons of finished steel for civilian production, believes Mr. Batcheller, compared to the 1937 production of 38,500,000 tons. Also encouraging, said Mr. Batcheller, is that reconversion will present few problems to the steel industry, except for continuous sheet mills which have been producing plates.

Domestic copper supplies will be increased better than a third over the 1937 high, he predicted. In the year after V-E Day, domestic copper ought to be available at the rate of 4,700,000,000 pounds compared with the 3,500,000,000 pounds delivered in 1937.

Aluminum production available for civilians after V-E Day will be more than double that of 1937, it was predicted, with some 1,000,000,000 pounds being produced annually in contrast to the 400,000,000 pounds delivered in 1937.

Potential capacity for production of aluminum in the United States will probably total 2,000,000,000 pounds a year, but we'll only be operating at 50% of that potential, said WPB.

Fuel Oil Users Who Converted To Coal Can Now Reconvert

WASHINGTON, D. C.—Petroleum Administrator Harold L. Ickes has annouced that in view of the improved fuel oil stock position he has called upon the OPA as the rationing agency to permit fuel-oil consumers who have converted to coal to return to the use of fuel oil, if they make such a request.

While the improvement in the fuel oil supply situation will now permit former fuel oil consumers who had converted to other fuels to return to the use of fuel oil if they wish to do so, the Petroleum Administrator added that at the present time there is not a sufficient quantity of home-heating oil available to warrant increasing the current ration.

Seeger Co. Gets High Inspection Rating

ST. PAUL — Seeger Refrigerator Co. has been given the highest inspection rating given out by the War Department, Army Air Forces, Air Technical Service Command, for their manufacture of the bomb rack for the B-29 Super Fortress, reports E. J. Brant, chief inspector for the company.

The Seeger company formally received the Army-Navy "E" award for outstanding production for the war effort on Oct. 21.

The Display Is Literally 'Done With Mirrors'

In this picture the customer has selected a package of frozen foods from the easily accessible open display compartment of the new Tyler frozen foods self-service case. The inclined mirror reflects the merchandise in the display compartment, while the panel above lists prices. Extra storage space is provided in the bottom, which is reached through the doors.

Tyler Self-Service Frozen Foods Case Designed Without a 'Lid'

NILES, Mich.—An open-type self-service frozen food display cabinet for retail stores in which the display of the merchandise is literally "done with mirrors" has been designed by Tyler Fixture Corp. here.

Production and sales of the new Tyler frozen food display case waits upon the word of WPB.

Following are the features claimed for the new fixture:

A design that attracts attention to the frozen food department from all parts of the store.

Wide open, no doors to move, so that purchasers can pick up the merchandise easily.

Lighted sales panel listing merchandise on sale and giving prices.

Miror back bar to magnify the display and draw customers to the department.

Ample storage for surplus stock so that the sales compartment can be instantly replenished on busy days.

Maintenance of proper temperature at all times.

A night cover instantly available for use for economy of operation.

The Tyler frozen food display case is 8 feet long, 82 inches high, and 30 inches deep. It is made to line up with the Tyler wall dairy refrigerators.

At the top of the cabinet a fluorescent lighted frosted glass sign calls attention to the frozen food department. Just below this sign is a fluorescent lighted panel board listing with celluloid letters and price indicators all merchandise for sale and the prices.

Just under the panel board is a mirror running the full width of the case reflecting a display of merchandise in the open display compartment.

Hidden back of the panel board is a waterproof plywood night cover for use at night and Sundays. This cover closes the open sales compartment and reduces the running time of the refrigeration machine when the case is not in use for merchandising purposes.

Counter-balanced and arranged on a trackway, this night cover can be lifted by mere finger pressure and disappears from sight back of the sales panel during the time the store is open.

The open sales compartment is large enough to accommodate 250 average sized frozen food packages in the lower half. Except on very busy days, it is recommended that the frozen food packages be kept below a point 8 inches below the rub rail of the sales compartment, the manufacturer states.

Lower part of the case, available through three doors, provides 17 cubic feet of storage space.

The Tyler frozen food case operates with a 1-hp. air-cooled condensing unit which should have a capacity of 3,200 B.t.u.'s at a suction temperature of -25° F.

Front of the cabinet is of vitreous porcelain, white with black trim. Sales panel is finished in white synthetic enamel. The light hood is made of vietreous porcelain and frosted glass.

Refrigeration is furnished through plate-type coils. The case is constructed with 4 inches of insulation.

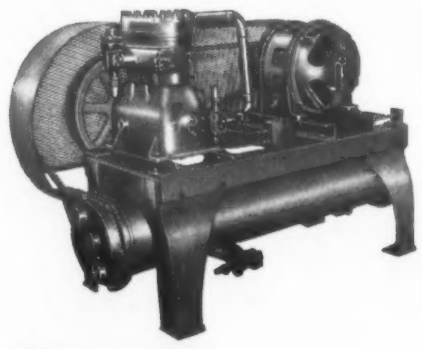
Whether It's GI Supply or... Refrigeration

All-Purpose Engineering

Provides More ADAPTABILITY Per Unit

GI Joe Paratrooper, at right, is wearing one of the Army's new "wonder quilts"—a combination blanket, sleeping bag, life preserver, pup tent, hammock, coat, and—as shown in the sketch—poncho. Leave it to the Army Supply Services to devise ingenious All-Purpose equipment!

In the field of refrigeration, leave it to Universal Cooler to design practical, dependable refrigerating units for the widest possible range of applications. The new and complete line comprises advanced, field-proven basic models in hermetic, self-contained open-type and remote types. These units can be quickly and accurately "tailored" to your postwar fixture requirements . . . thanks to ingenious All-Purpose Engineering. So, if "Top Performance at Low Operating Cost" is to be a feature of your postwar products, then say,



"Let's ~~Ask~~ Buy Universal Cooler"

Remember, too, that there is always a Universal Cooler Field Engineer, backed by one of the most complete test-research labs in the industry, ready to analyze and prescribe for your refrigeration problems. Write today!

Complete line of Hermetic, Open Type Self-Contained, Remote Type Refrigerating Units—1/8 to 20 HP

FOOD FIGHTS for Freedom

WAR BONDS—YOUR WAR INVESTMENT IN PEACE

UNIVERSAL COOLER

WE SELL TO MANUFACTURERS ONLY

UNIVERSAL COOLER CORPORATION • Automatic Refrigeration since 1922

MARION, OHIO • BRANTFORD, ONTARIO

For: TRUCKS, LOCKERS, COOLERS, COUNTERS, CABINET CONVERSIONS, use:

KOLD-HOLD PLATES

KOLD-HOLD MFG. CO.
LANSING, MICH., U.S.A.

WANTED

Enquiries from United States manufacturers interested in the

CANADIAN MARKET

Chatco maintains two modern factories in Canada for the production and assembly of stamped, rolled and machined metal products, for the refrigeration, air-conditioning and heating industry.

May we suggest that by having your product manufactured and assembled in Canada, you will be on a permanent, economic basis to compete in the Canadian market.

CHATCO STEEL PRODUCTS LIMITED

CHATCO CUSTOM METAL PARTS AND HEAT TRANSFER ... EQUIPMENT ...

GENERAL SALES OFFICES: 512 C.P.R. BUILDING
TORONTO, CANADA

Manufacturing and assembling metal components for over half a century.

Training Class Ends Shortage in Dubuque

DUBUQUE, Iowa—Twelve students were recently graduated from what is thought to be the first class in refrigeration repair work conducted in Iowa under the national refrigeration repair training program, which was begun here May 8.

Graduates of the course completed 201 hours of refrigeration service study, meeting three nights a week. First 18 hours of instruction were under Wilbur Dalzell at Senior high school, and the balance under Clarence Bradshaw and Theo. H. Glass of Iowa Engineering Co. at that company's offices and shop.

"We feel very much pleased that 12 men out of the 17 who started this training program completed their course," said Frank E. Bescher of the Interstate Power Co., coordinator of the program. "We have definitely taken this area out of the possibility of a critical shortage in refrigeration service."

Graduates included: Milton J. Pauly, Stanley E. Efferding, Paul Fondell, Oliver Knopp, Cletus Daley, B. A. Dress, Eugene A. Geisler, Carl H. Waechter, Wilfred Nestor, Earl G. Engler and D. W. Woodruff.

Advanced course of refrigeration repair work may be offered in the near future, it was announced.

Texas Distributor Moves Into Larger Quarters

SAN ANTONIO, Tex.—The Southern Equipment Co., one of the southwest's oldest distributors of mechanical refrigeration and major appliances, has moved from 419 S. St. Marys St. to a four-story building at 210 West Commerce St., giving them approximately 30% more floor space.

The new location will also provide greater merchandising and shipping facilities, since the building extends through the block to Market St., at which end the shipping and receiving departments are situated. In addition, the firm is expanding its display facilities and personnel.

Officers of the firm are: Reagan Houston, president; Oscar J. Brunner, vice president, and Sidney J. Allen, secretary-treasurer. Frank G. Atwater is general manager of the business, and under his capable supervision the firm has shown consistent expansion.

Bastian-Blessing Names Lucas Sales Manager

CHICAGO — Lawrence N. Lucas has been promoted to general sales manager of the soda fountain, frosted food, and ice cream cabinet divisions of The Bastian-Blessing Co. of Chicago.

Formerly general sales manager of the Russ Soda Fountain Co. of Cleveland, he became associated with The Bastian-Blessing Co. in 1937, when it absorbed the Russ company. Serving as assistant sales manager for several years, he also has served as manager of the War Contracts Division, which department he will continue to manage for the duration.

Electric Motors FOR SALE

We have on hand a limited amount of Refrigeration type ELECTRIC MOTORS popular makes as:—Gen. Electric, Westinghouse, Wagner, Delco, Century.

A.C. Current

⅛—¼—⅓—½ H.P. 110-220 Volts 60 Cycles, 1,750 R.P.M. Single Phase.

D.C. Current

⅛—¼—⅓—½—¾—1—1½ H.P. 115 or 230 Volts—1,750 R.P.M. Compound Wound.

The above mentioned Electric motors can be used for Refrigerators, Water Coolers, etc. All motors are subjected to prior sale. Wire or Write.

P. J. QUINN'S SONS Electric Motor Co.

46-15 Vernon Blvd.
Long Island City 1, N. Y.

Shortage of Repair Men Eases In New York City, But Supply of Some Parts is Still Fairly Tight

NEW YORK CITY—Improvement in the electric refrigerator service situation in this area has been noted by R. J. McKenty, secretary of the Refrigeration Service Managers Association of Greater New York.

McKenty, who is associated with Rex Cole, said the manpower situation has eased up somewhat since Selective Service has been drafting fewer men over 30, and the industry has been fortunate in acquiring a small number of mechanics from recently closed war plants. Although the general supply of materials and parts is a little more liberal, he said, a few parts have dropped out of sight entirely.

He cited the most serious present shortage as being "Freon" refrigerant.

"Of course it's not all beer and skittles yet," said A. T. Taft, G-E's New York district service supervisor. "A few things are still hard to get. We haven't been able to put out as many new cord sets as we would have liked to, but we can repair cords or supply them, along with other repair services."

Explaining that his company's Long Island service plant was set up to repair anything from a curling iron to an electric furnace, Taft said the quantitative supply of manpower was not as big a problem as the length of time it took to train unskilled men to handle a number of different appliances.

"As far as parts are concerned," he reported, "we have the most trouble finding them for 20 to40-year-old electric fans and also old electric toasters. With the more up-to-date appliances the parts situation shifts from time to time."

Mary R. Reidel of the Proctor Electric Co., which maintains a New York City repair plant staffed entirely by women, pointed out that although there had been a general easing of materials for repair parts, if a certain part happened to be manufactured in a critical labor area, it was apt to prove at least a temporary bottleneck in repairing appliances.

Her company tries to keep parts on hand for its electric roasters, waffle irons and roaster grills, and for 20 different models of electric irons, including obsolete ones, parts for which in normal times would have been discarded long ago.

Although Proctor never employed women repair workers before the war, the company plans to retain them after the war, since they seem to have more interest in "making the thing work," it was stated. Plans for extended service facilities will allow the continued employment of the women workers, as well as making jobs for returning servicemen, Miss Reidel said.

Drayer & Hanson Promotes 4 to Prepare For Postwar Expansion

LOS ANGELES — Announcement of four important organizational appointments in connection with postwar expansion plans, is made by R. E. Ristow, president of Drayer & Hanson, Inc., Los Angeles manufacturer of heat exchange devices and equipment.

Albert Hanson has been promoted to the position of vice president in charge of engineering. J. C. Lombardi, who has been in special sales capacities for a number of years, has been appointed as vice president, director of sales. Scott M. Hauser, vice president, becomes director of the sales promotion and advertising departments.

A. H. Witt, who has also been in special sales work for the corporation during the war period, has been promoted to the position of air conditioning and refrigeration sales manager.

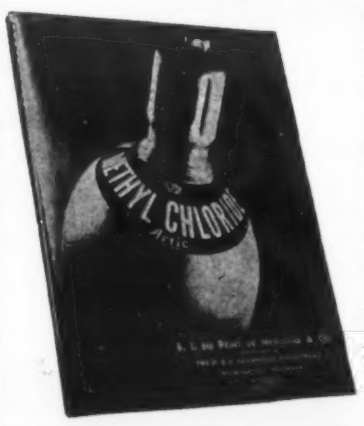
SPECIFY 99.5% PURE

DU PONT METHYL CHLORIDE

FOR REFRIGERATION WORK

THIS HIGH-PURITY PRODUCT meets the exacting requirements for a *dependable* methyl chloride to be used as an original charge, recharging or replacement for unavailable or scarce refrigerants. Current supply is sufficient to fill approved requirements. Order only what you need, but don't stock up, for you can get Du Pont Methyl Chloride when you need it...quickly ...from stocks in principal cities.

Don't forget to empty cylinders promptly...return them quickly. That's how you can help to keep Methyl Chloride moving to you and others.



Get this book! Send for your copy of Du Pont's 92-page Manual on Methyl Chloride. It's packed with helpful, practical data for every refrigeration engineer and service man. Just write: E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Department, Wilmington 98, Delaware.

DU PONT METHYL CHLORIDE—SPECIFICATIONS

Purity	99.5% Methyl Chloride
Moisture	0.008% by wgt. max.
Acid (as HCl)	0.001% by wgt. max.
Residue on Evaporation	0.01% by wgt. max.
Boiling Range (760mm)	—24.6° to —23.6°C.
Color	water white, clear

BUY WAR BONDS EVERY WEEK!

DU PONT ELECTROCHEMICALS

DU PONT

BETTER THINGS FOR BETTER LIVING ...THROUGH CHEMISTRY

MODERNIZE YOUR REFRIGERATION SYSTEM
WITH "MH" *Heavy Duty* FRIGISTAT
MINNEAPOLIS-HONEYWELL REGULATOR CO.

WHEN PEACE COMES

KOCH

WILL AGAIN PRODUCE COMMERCIAL REFRIGERATOR EQUIPMENT FOR CIVILIAN USE

NOW SOME SELF-CONTAINED REACH-IN REFRIGERATORS ARE AVAILABLE FOR THOSE WHO CAN QUALIFY . . . . . .

Write — Wire — Phone

KOCH REFRIGERATORS
NORTH KANSAS CITY . . . MO.

Packers Hear About 'Route Selling' of Frozen Foods to Home Freezer Users

Chicago Deepfreeze Distributors Says That 1,800 Customers Buy $15 to $30 of Meat At a Time

By R. E. Nagler, Deepfreeze Distributors, Inc.*

I am not so sure that I am taking the right tack on this, but when I started for this meeting I rather understood we were to have 10 minutes to tell our side of the story, and I sort of walked into a lion's den, because I am going to talk in favor of frozen meats.

Some of my talk has already been made and I greatly appreciate the boost for the future of the frozen food industry, and I wish we in that industry were as far ahead as the chain store and the super market operations at this point.

I am with an organization that operates a pilot plant right here in Chicago. We have been going for one year. We found some things that had to be changed, and we found some things that we believed were beneficial to the members of the Meat Institute.

We distribute meat in the frozen state, and we know at this point—or rather we feel strongly, after the other remarks this morning—that frozen packaged meats are here to stay. Whether we all agree at this point is immaterial. We know definitely that our No. 1 boss, the American homemaker, likes frozen packaged meats, and that is the one we are going to serve.

There is nothing new about this frozen meat distribution, but I believe ours is a little different from anything that has been tried, and I shall now try to tell you about it.

First of all, we handle only quality meats. I think anything that takes space in a freezer must be of high quality or it won't be a good product when it gets on the table, and that is the final test of the entire thing.

How Store Buys Meat

We buy our meats from packers in quarters, and we put our beef and lamb through an aging process. We try to give the American consumer something better than she is able to get anywhere else, and we do it with the least amount of loss and shrinkage, and with a modest amount of profit for ourselves. We keenly believe in the theory that the distribution has to be made on an economically sound basis.

As I say, our aging is done in our own place in a limited time, through a moisture and temperature control method, and, gentlemen, it works successfully.

Packaging and Wrapping

Immediately after the meat is cut and prepared into the salable package form, for instance four chops to a package, sirloin steak in a package, roasts in packages, it is wrapped in a certain way.

We have found that in order to prevent dehydration the best wrap up to this point is cellophane and locker paper with the so-called confectioner's or drug store wrap. We seal it and it is put in the freezer. It is immediately quick frozen, and after that it can stay in that condition, but with the shortage of meat today it is either sold across the counter or through a route operation.

We have a route operation that carries the meat to the owners of Deepfreeze units. On the north shore of Chicago there are about 1,800 Deepfreeze customers, and these people buy from us once every 30 days.

Buying Once a Month

Our man calls at their door after they have phoned in an order, and he places from $15 to $25 to $30 worth of meat in that holding box at one time. People use it as they need it. They always have something in reserve. This has been going on for quite a while, and up to now it is a most interesting and successful operation.

People have found that they live better out of a holding box, and incidentally they are not all Deepfreeze units. A close check-up just recently showed us that between 25 and 30% of the customers we are now serving on our routes are not owners of Deepfreeze, but have some other types of holding units.

Savings Claimed

We sell our vegetables in larger sizes. We are giving the customers an economy. In other words, if the housewive can buy 2½ lbs. of peas for 64 cents, it is a better buy than 12 oz. for 23 cents. Ladies who do shopping right along are well aware of those things and practice those methods.

However, you are interested mainly in the meats. There are certain advantages to this. For instance, our butchers are busy all day long as meat cutters, practicing a skilled profession. They don't have to take any time out to serve Mrs. Brown or to feel a little critical if they don't happen to have the type of meat that she wanted the last time. They spend all their time practicing their skilled art, and do a perfectly fine job.

New Ways to Cut Meat

We have made changes in the way we cut meat. We have learned certain types of things are more advantageous to the customer. We bone more of our roasts, and we try to give our customer the greatest amount of edible meat for her ration points, which is very important today.

The butchers do the cutting—we, of course, are employing girls to do the wrapping. That is economically sound, and the butchers do not have to take very much time for that, and we like to have them busy all the time doing the things they are best trained to do.

As more freezing units are distributed and sold, this method of distribution will increase, and as customers find out how good frozen meats are, the demand for them will increase.

Frozen Foods in Front

There was a time when anyone who spoke about frozen foods thought of the cold storage chicken that was no good at one time. I think we are all acquainted with that. I believe that attitude has changed considerably, because the American public has learned that frozen foods are probably second in preference to fresh prepared foods. I am thinking particularly of garden vegetables.

Canned goods are taking a rather third poor place, and as far as dehydrated foods are concerned—and

(Concluded on Page 11, Column 1)

*Delivered at the Annual Meeting of the American Meat Institute, Drake Hotel, Chicago, Sept. 28, 1944.

When they look for their new home freezer... THEY'LL LOOK FOR THE NAME—

Deepfreeze

TRADE MARK REG. U.S. PAT. OFFICE

They know only **Deepfreeze** *provides 100% primary freezing surface...100% food protection*

★ With millions of Americans it's no longer a question of "Shall we buy a home freezer?"—it's "Which one will it be?"

Deepfreeze is answering their question, with powerful full-page advertisements in the leading magazines, focusing interest on the Deepfreeze principle of 100% Primary Freezing Surface.

Thousands of Americans are reading advertising by Deepfreeze—and are responding to it. Thousands are learning why Deepfreeze, with its 100% Primary Freezing Surface, prevents foods from drying out during storage, keeps foods farm-fresh so much longer.

Protected by exclusive patents, the Deepfreeze principle of 100% Primary Freezing Surface prevents harmful food dehydration because the entire inner wall of the Deepfreeze is *freezing surface*. Temperature differential between the cold wall and food storage area never exceeds two degrees. Therefore, in a Deepfreeze there is no circulation of warm air to pick up moisture from stored foods. Foods stay juicy, moist and fresh—indefinitely!

Since 1938, thousands of Deepfreeze Units serving America's homes have proved the *rightness* of the Deepfreeze freezing principle. When the time comes to buy, your customers are going to insist upon a Deepfreeze. Get ready for that time now. Write us today!

Cartridge cases, airplane nose and tail gun turrets, blood desiccating units and industrial freezing equipment are among the war products that Motor Products Corporation is proud to be making to speed the day of Victory.

AWARDED DETROIT PLANT ARMY-NAVY E

Deepfreeze

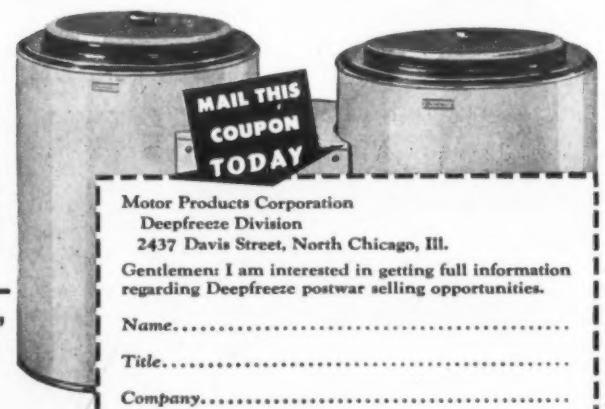
TRADE MARK REG. U.S. PAT. OFFICE

ONLY MOTOR PRODUCTS CAN MAKE A "DEEPFREEZE"

MOTOR PRODUCTS CORPORATION

Deepfreeze Division: 2437 Davis Street, North Chicago, Illinoi

Main Plant: Detroit, Michigan — Canadian Plant: Walkerville, Ontario



Motor Products Corporation
Deepfreeze Division
2437 Davis Street, North Chicago, Ill.

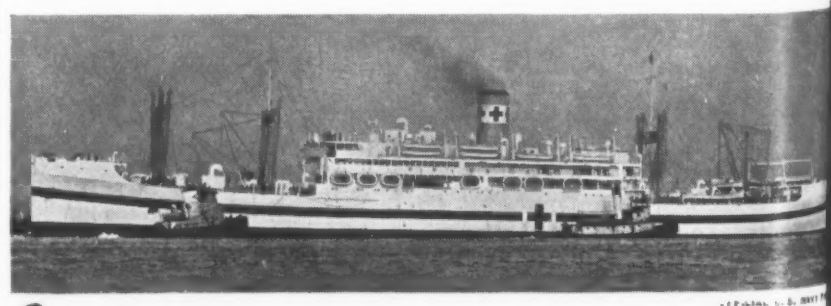
Gentlemen: I am interested in getting full information regarding Deepfreeze postwar selling opportunities.

Name.....

Title.....

Company.....

Address.....



Mercy Ship "Refuge," Equipped like Best Hospitals, is Fitted with

Launched as the transatlantic freighter Blue Hen State, [illegible] vessel in a brief 20 years became in turn the passenger-and-freight carrier President Garfield, the luxury liner President Madison, [illegible] troopship Kenmore, and now the hospital ship Refuge.

In 1922 she made a record 10-day crossing of the Pacific. [illegible] next year she capsized in Seattle harbor. In 1924 she caught fire at sea. Now, with a strengthened hull and many other improvements, she becomes one of the best-equipped mercy ships afloat.

The Refuge carries three Frick "Eclipse" refrigerating machines which make ice, do low-temperature freezing, and cool separate spaces holding meats, fruits and vegetables, dairy products, [illegible] and biologicals. A fourth machine supplies cold drinking water.

You'll find Frick Refrigeration in essential service 'round the world. May we quote on your cooling needs?

FRICK CO., Waynesboro, Penna.

TRADE FRICK MARK

Refrigeration

Frozen Cooked Foods, Bakery Goods Delivered by Chicago Firm

(Concluded from Page 10, Column 5)

I keep sticking my neck out on these things—I think they are also-rans, because if you ask any of the boys over on Guadalcanal or in Sicily—or you can ask me— I ate in the Pentagon for a year—dehydrated potatoes are not good; they remind me of wallpaper glue.

One of the best tests that I can tell you about to show you that this is working, is the fact that our customers are well pleased. They come back for more of the same. Our sales per stop are increasing. As I mentioned at the beginning, this is a pilot plant. We have not worked out all of the bugs. We sometimes don't know whether we have the bull by the tail or whether he is throwing us around.

There are a lot of bugs in it. Don't let me oversell this thing. But, gentlemen, this is a first step in these attempts. I was in Columbus, Ohio, and spoke at the Locker Plant Association meeting, and locker plant operators are keenly interested in the distribution of frozen meats because they have the facilities. The more they know about it—and I know from the interest they have shown—it is going to be a distinctive trend in that direction, and they are going to take more of the meat business away from the ordinary butcher distributor.

After everything is said, the ordinary butcher shop method has been in existence for a long time, and there haven't been many improvements in it. Things do progress.

Freezing Cuts Waste

One other factor I want to bring out is that freezing eliminates waste. It makes it possible for a distributor to buy the best types of meats or poultry when they are plentiful, prepare them for the market immediately, and it is necessary to eviscerate poultry immediately and then you can freeze it; if you package it properly you can keep it an awfully long time, and it will be just as good when you open it. That I can prove right along.

Incidentally, I believe that frozen steaks are good. There is a very little loss in flavor. You don't have to defrost them to broil them; you can broil them while they are still frozen and you don't lose the juices.

Butcher By-passed

In our operation we fill the home freezer with a good supply of fine, high-grade meat and other frozen foods. By the time the customer gets around to wanting to go to the butcher again, he hardly knows her and she just has to come back to us.

Gentlemen, it is a trend that I want to point out, because we are going to go after this business, and we are going to get our share of it.

Ready-to-Bake Pies

I was interested in hearing about frozen pie, and I am just going to take a minute to tell you about that because right here on the North Shore we sold something like 275 of them last week. We are right next door to a baker shop, and we sell more frozen pies than the baker in the way of fresh pies.

Of course the girl has to take them home and bake them, but the idea is that she can take a pie and have it available in her freezer, and then bring it out an hour before the old man comes home; put it in the oven and bring out a fresh-baked cherry pie, steaming, piping hot. There must be something to it, because they are paying 85 cents a piece for it frozen. They are good pies.

Muffins and Dinner Rolls

We are merchandising blueberry muffins, raisin dinner rolls, and cloverleaf rolls the same way, and frankly, this frozen bakery business has just knocked us for a goal because we didn't realize there was anything to it. It was just a novelty with us when we started, but it is helping us through the war. We can't help ourselves. Interference has been knocked down.

We have done a good deal of work, and this is of interest to the meat industry, with frozen prepared cooked foods. We sell chicken a-la-king frozen, and it is good. It is better than any chicken a-la-king that can be put in glass or canned. It is just good because it is made with the real cream sauce. We don't make it; we merchandise it.

Corned Beef & Spaghetti

We have good corned beef hash, spaghetti and meat balls, and excellent beef stew. I can get testimony right here in the room on that. We have chile con carne, and barbecue sauce that we merchandise with frozen ducks and chickens and barbecued ribs. One of the latest things is a frozen salad.

It is another thing like this idea of the bakery goods that caught fire all at once, and it is an excellent product; the main thing about all these frozen meats and foods is that the American homemaker is most interested in the convenience angle. The nearer we can bring food to her so all she needs to do is put a fork in it, the better she likes it.

Wisconsin U. Survey Shows Farm Freezer 'High' With Farmers

MADISON, Wis. — Farm freezers will rank high in the preference of many farmers for new electrical equipment after the war, surveys among farmers in the Wisconsin area have revealed, according to Floyd Duffee, agricultural engineer at the University of Wisconsin.

While American farmers consider the storing of meats as the main advantage of the farm freezer, Duffee pointed out that they are contemplating using the freezer in the postwar period for preserving fruits, vegetables, and berries, which previously could be kept only through canning.

Before the advent of the home freezer, the farmer had no way, except canning or drying, for storing beef, although pork could be cured and smoked. Farmers are planning to store all kinds of meat, poultry, and game in their postwar farm refrigeration units, said Mr. Duffee.

Although frozen food locker plants have proven popular as storage facilities for rural residents, Mr. Duffee stated that often lockers are located at a considerable distance from the farm, while with his own freezer the farmer can have stored foods available at home in all seasons.

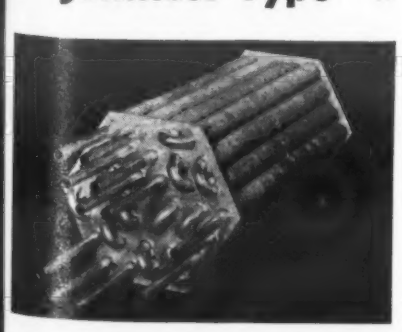
Experience of farmers who have had electric freezers shows that a freezer of from 15 to 20 cubic feet capacity is the most advantageous for farm use, the agricultural engineer added.

Young Radiator Co. Appoints Dallas Firm

RACINE, Wis. — Young Radiator Co., manufacturer of heat transfer products, has appointed Rodgers Engineering Co. of Dallas as sales and engineering representatives in northeast and north-central Texas.

Rodgers Engineering Co. will provide sales and engineering service on the line of Young heating, cooling, and air conditioning products as well as a complete line of complimentary accessories.

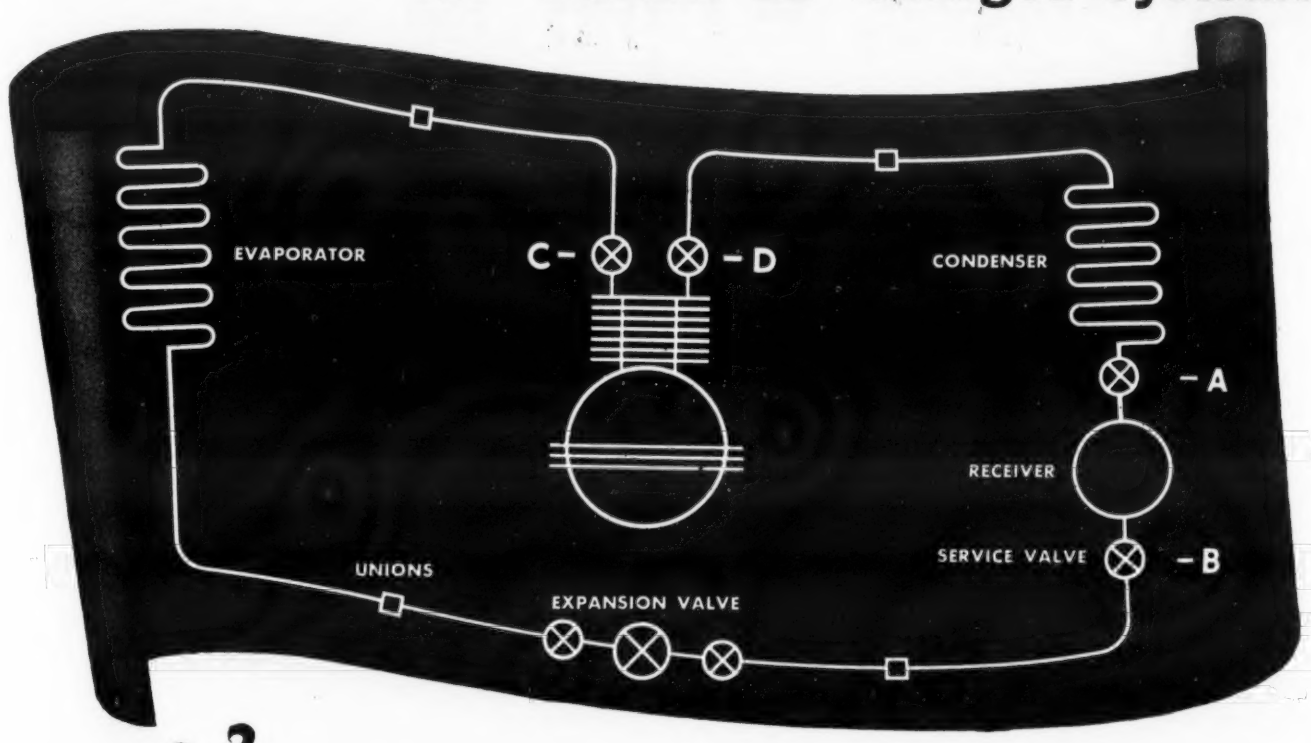
ROME-CONDENSER
★ Jointless Type ★



Rome Water Cooled Condenser Coils insure trouble-free condensing equipment. Used by leading compressor manufacturers.

ROME-TURNEY RADIATOR COMPANY
222 CANAL ST.
ROME, N. Y.

MAINTENANCE TIPS
for "FREON-12" charged Systems



NO. 2

SHUTTING DOWN SYSTEMS

Check these important points on shutting down "Freon-12" charged systems during periods when operation of the equipment is not required. These tips will help you conserve "Freon-12"—save you time, trouble and expense.

1. Determine the capacity of the receiver. (See diagram.) Make certain it will hold the entire charge of "Freon-12," and still have a void or gas space which is 10% of the receiver's volume. This extra space is required to allow for expansion of the liquid refrigerant at higher temperatures, and eliminates the possibility of bursting the receiver because of hydrostatic pressure.
2. When the receiver is of adequate capacity, close valve "B", shown above. Operate the compressor, to evaporate all liquid in the line between valve "B" and valve "C". "Freon-12" then condenses, flows into receiver. Reduce the back pressure to from 2 to 5 pounds gauge reading, then close valve "A".
3. When the receiver is not of adequate capacity, close valves "A", "B", "C" and "D" to isolate the refrigerant in separate sections of the system.
4. Test all valves to guard against leaks during the shut-down period. Send for free reprints of our previous advertisement in this series explaining "Leak Detection and Correction."

Pass this page along to others in your business who may be concerned with the operation and maintenance of "Freon-12" charged systems. Write today for as many free reprints of this advertisement as you need, or for any further information we can supply which may be of help. Address: *Kinetic Chemicals, Inc., Tenth and Market Streets, Wilmington 98, Delaware.*

★

BUY A WAR BOND EVERY MONTH

KINETIC
FREON
safe refrigerants
"Freon" is Kinetic's registered trade mark for its fluorine refrigerants

A Method to Use for Establishing the Local Potential for Appliance Sales

Editor's Note: This is the second and concluding part of the report on W. F. Switzer's discussion of postwar appliance potentials, and how to establish them for any given market. As manager of Frigidaire's market research and organization department, Mr. Switzer draws from facts proven by experienced analysis within the appliance field. The modern refrigerator is the appliance used as an example. His discussion here follows Part I, presented in the Oct. 23 issue of the NEWS.

Table 5 projects refrigerator sales for both the total U. S. and "Market A" for 1939, 1940, and 194x. Using these figures, we have calculated "Market A's" percent of U. S. and found that in each case the 194x percent is slightly higher than the year from which it was estimated.

Our estimates indicate that we expect this market to grow or prosper at a faster pace than the national average. To check this tendency, we reviewed Table 4's figures on income. Estimated U. S. income payments for 194x are 189% of the 1939 level, and 175% of 1940. Bank debits for "Market A" show that we expect 194x to be 222% of 1939, and 190% of 1940.

"Market A" is forecasted to gain as compared to the U. S. average level of postwar income. This checks with the increase "percent of U. S.-wise" shown above.

This example cross-checks and balances. Some markets may not do this. In such cases, a thorough review of the basic data—income, domestic electric customers, and past sales—should provide a satisfactory solution.

No qualms should be felt about comparing refrigerator sales with income payments or bank debits. Refrigerator sales seem to parallel variations in income closely. Perhaps the real relationship is even closer than pictured here. The worst part of the 1938 "recession" seemed to come during the peak selling season for refrigerators. This would partly account for the sharp drop in refrigerator sales during 1938. Reductions in the retail prices of refrigerators would account for some of the increase during 1940 and 1941.

The relationship between income payments and bank debits (Table 4) proves to be so remarkably close that it seems quite plausible to use bank debits in place of income payments when the latter figure is not available. Such a substitution, however, is permissible only for calculating a percent increase or decrease of some base year. The actual dollar figures of income payment and bank debits are not comparable.

Willard Hall has developed a formula which can be used to project potential postwar sales for every type of electrical appliance. It can be specifically applied to any market and to each of several different appliances. This formula is based on three axioms:

1. Electrical appliances are purchased for family use, not individual use.

2. The purchase of electrical appliances varies directly with the number of persons employed per family.

3. The potential market must be restricted to families living in wired homes.

In the case of "Market A" the application of the refrigerator formula results in a forecast for 194x of 13,117 refrigerators.

As mentioned before, we believe a plodding, local fact-getting approach to this problem is best. However, this formula is easy to apply and is based upon sound axioms. We suggest that it be used as a check on the results tallied by using a chart similar to Table 5. If there is too great a difference, a careful rechecking job should be done.

A check estimate on the overall postwar demand for electric refrigerators is an inventory of families having electricity and refrigeration, and a guess at what the future may bring (see Table 6).

The U. S. Census shows that in 1940, 65% of "Market A's" wired homes contained a mechanical refrigerator. Of these, we believe 60% were electric and 5% gas. Including ice users, 93% of this market is interested in refrigeration. This might be looked upon as an ultimate top limit of saturation.

By adding to the electric refrigerators in use at April 1, 1940, the sales from that time through 1942, and by subtracting an estimated number of junked refrigerators, we have found that about 73% of the families now living in an electrified home have electric refrigerators.

By using our previous estimate of 75,000 wired homes in "Market A" for 1950, and by reasoning that 85% of this market, or 63,750 electric refrigerators in use, would be a reasonable goal to get for 1950, we have placed ourselves in a position to approximate the sales volume necessary to reach this level.

Assuming 11 years to be the average life expectancy of a refrigerator, we have accumulated the sales from 1938 through 1942 and subtracted the result from 63,750. This leaves about 31,000 as a rough minimum sales expectancy figure for the postwar period from the start of production to 1950.

Such a figure can not be accepted as final because its construction is so very broad and empirical in nature. It does not take into account above-normal replacement rates, extra rapid obsolescence, or shifting families with refrigerators. Then too, some markets seem to move at a faster pace than others by reason of higher incomes or more effective promotion, advertising, or selling effort. Regardless of its limitations, though, this figure has its obvious uses in your overall planning.

In estimating refrigerator sales for a normal, average year, "Market A's" four-year average of the prewar sales was 7,556 units. These four years included a great variety of conditions, the combination of which may or may not be considered normal. A prewar normal would seem about 7,000 units. Somewhere between 1939 sales and 1940 seems right, with some discount given for 1940 price reductions.

If we should take our 1950 goal of 63,750 electric refrigerators in use and consider 11 years as the average life, we would get a normal replacement market for the postwar of 5,800 refrigerators per year.

But this does not allow for market growth, increase in saturation, or other unusual market conditions. Since the prewar level was 7,000 units it appears there is a faster turnover in this market than average. Other factors bear this out.

Our judgment based on historical records and overall market forecasts indicate we can expect "Market A" to produce as a normal postwar year 7,500 units.

Please understand again that the term "normal" used in this sense means "average." Variations from this could go up or down, perhaps as greatly as from 25 to 30%.

To summarize the refrigerator sales projections for "Market A," consider the total of these estimates. Table 5 gave results ranging from 14,726 to 16,458 units as a forecast for 194x, an average of 15,592 refrigerators. The "P.A.M." formula approximates 13,117 units.

Our best overall estimate for 194x, all facts considered, is 15,000 refrigerator sales.

The estimate of potential demand for refrigerators from the beginning of postwar production until 1950, arrived at in Table 6, is 31,000 units. This figure seems rather conservative when compared with other factors.

Estimates for sales expectations in a normal postwar sales year point to 7,500 units. This normal or average level should be the best basis for most dealers' "down the road" postwar planning on refrigeration.

Projections of sales for the immediate postwar are predicated on a pent-up demand to be satisfied after the war as soon as productive facilities permit, and while every dealer will want to make sure to get his share of this "pent-up" market, we must bear in mind that after this "catching-up" period the refrigerator industry will return to a more normal or average development growth curve.

However, in overall planning, you and the dealers in your market must not fail to consider expanding markets for some of the existing appliances which have not yet attained their full growth. The electric range is a good example of this type of appliance. The affect of radical new developments in old products also must be considered, for such improvements often hasten obsolescence and increase sales. The automatic washer should stimulate washing machine sales in this manner.

New products will also add to the sales volume of the appliance dealer.

(Concluded on Page 13, Column 1)

Table 5—Forecasting the Year 194x Refrigerator Sales by Use of Two Normal Sales Years and A Total U. S. Estimate

Total U. S.

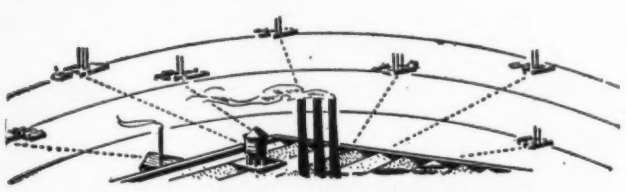
	1939	194x	194x % of 1939	1940	194x	194x % of 1940
Domestic Electric Customers	28,656,000	33,000,000*	115	29,695,000	33,000,000*	111
Electric Refrigerator Ind. Sales	1,900,000†	4,480,000‡	236	2,600,000	4,480,000‡	172
Sales per 1,000 Dom. Electric Customers	66	136	....	88	136	....
Market "A"						
Domestic Electric Customers	61,447	72,184	117	63,095	72,184	114
Electric Refrigerator Ind. Sales	6,097	14,726	242	9,311	16,458	177
Sales per 1,000 Dom.						

Sources: *Estimated. †Electrical Merchandising. ‡The P.A.M. 1946 projection.

Crosley has 2,500 partners

Who they are:

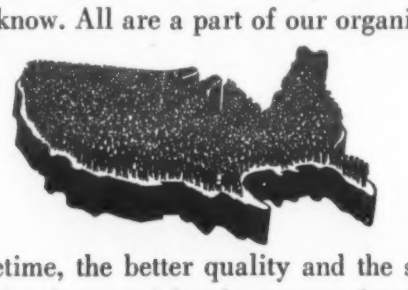
They are the companies who supplied many of the component parts for Crosley products in bustling times of peace . . .



. . . who furnish raw materials, fabricated parts, special test equipment, machinery and facilities to speed Crosley production of more than forty vital weapons in anxious and hectic days of war . . . who will help create, in similar ways, the better-than-ever postwar Crosley radios, refrigerators and other household appliances.

Why Crosley needs them:

Certain suppliers roll better steels — others produce better paints and enamels—or make better switches—or other electrical and mechanical devices — others assemble certain component parts more efficiently and economically than anyone else we know. All are a part of our organization.



In peacetime, the better quality and the savings effected by this specialized mass production are enjoyed by the millions of people who use Crosley products.

Surely this is a notable example of the interdependence of modern manufacturing . . . of interlocking teamwork that is helping Americans to out-produce the rest of the world in wartime.

Crosley's Job:

In this manifold partnership the Crosley organization — 9,000 highly skilled men and women — uses these exceptional materials, parts, and assemblies to produce the finest radios, refrigerators and other household appliances that people

can buy. Crosley engineers and designers will continue to provide, in all Crosley products, the *user-plus* features that enlarge the markets for Crosley products — employing the highest skills of these many suppliers.

Crosley thanks them all:

. . . each and every one of its 2,500 loyal, efficient supplier-partners, and looks forward with them to larger opportunities for postwar services to the public.

CROSLEY

THE CROSLEY CORPORATION

CINCINNATI, OHIO

Peacetime manufacturers of Crosley refrigerators, radios, other household appliances and the Crosley Car. Home of WLW, "The Nation's Station."

SALUTE TO THE WEST

This important, growing frontier is doing a magnificent job.

Keeping pace with the growing West is the California Refrigerator Co., of San Francisco and Oakland, California, progressive jobbers in refrigeration and air conditioning supplies, replacement parts, equipment and tools.

Outstanding, indeed, is this company's record of long experience and dependability as an efficient source of supply, both for the armed forces and the civilian trade.

In this day of unprecedented distribution problems, concentrated and intelligent effort is doing an important job—*for today and tomorrow.*

Clarence F. (Sandy) Pratt, President

CALIFORNIA REFRIGERATOR Co.

1077 Mission St. San Francisco, Calif

441-23rd St. Oakland, California

Prices and Terms, Market Structure, the Activity of Dealers, Salesmen, Leagues—All These Figure In

(Concluded from Page 12, Column 5)

Home freezers seem a good bet to be a major sales item in the appliance field. Other items, some still uninvented, will come along to help the total volume of appliance sales.

We mention this to overshadow any "let-down" which you at first might get over the estimated sales of refrigerators dropping from the postwar peak of 15,000 units down to a normal or average level of 7,500 units in "Market A." There is always change and progress in the electrical appliance business. That is what makes it a profitable business. Dealer's plans for the postwar, even the "average" postwar, must anticipate growth and progress.

Furthermore, the return to a more normal or average refrigerator sales level could be delayed through improvements in this product. The frozen food aspects of refrigeration may bring about changes of product design that would make the prewar refrigerator obsolete.

Even if we should discount this point completely, the increase in appliance volume resulting from electric ranges, air conditioners, radio development and television, home freezers, and automatic washers should serve to bolster appliance sales volume sufficiently so that dealers will not lose volume total over postwar higher levels because of a return of the normal or more average refrigerator sales level.

All this merely places more emphasis on the fact that these estimates, based upon both mathematics and a consideration of the more obvious local market facts, are vitally important. However, in the final analysis, the figures worked out by pure mathematics are only the starting point.

Your intimate current knowledge of local conditions and future plans, plus sound business judgment, must be applied to the establishing of any final figures produced purely by mathematical means.

While the mathematics as outlined are the vitally important base or framework for establishing local appliance potentials, they are only part of the story. There is next to be considered all those "other" things that can affect one way or another the final end results—can influence local potential possibilities for any given period of time by a considerable amount.

Briefly, here is how a breakdown of these other factors looks:

Some of the Things That Will Affect Any Local Potential From Year to Year

I Overall Market Structure

How big is the market?

Population shifts—and likely reshifts.

Meter gains or losses.

Electric rates (on certain appliances).

Employment.

Wage levels and gross incomes (greater or lesser incomes in the lower income brackets particularly important).

Number of employes per family.

Cost of living.

Trend of general business.

Savings.

New building activity.

Number and type of retail outlets.

II Product Development

Appearance.

Features.

Added conveniences.

New applications for old products.

New type products to meet an unsatisfied consumer need, i.e., the home freezer.

New developments in an old type of product that *obsoletes* the products now in use, i.e., the automatic clothes washer.

And of much importance:

Minimum service requirements, essential to continued sales.

Utility value—used often or seldom.

Luxury item or staple product used in everyday living.

III Prices and Terms

Higher or lower retail price levels (on major appliances) have always affected sales to *all* income groups.

Stable price structure, marketwise, is essential.

Terms are very important in normal years and to lower income families.

Has product saturation and sale advanced to point where mass production had made possible the lowest possible retail price—to reach the greatest number of potential users.

IV Dealer 'Interest'

Appliance sales will "surge" ahead or "lag," all dependent upon dealer interest.

And dealer interest depends on:

Opportunities for profits.

Opportunities for volume.

Adequate individual dealer potential.

Consumer demand for the product.

Stability of the local appliance market.

Market trade-in practices.

Service experience and policies.

Overall distributor or factory branch policies.

Competition (other dealers of same or different type).

V Salesman 'Activity'

Salesman's activity on any appliance will depend on—

A good product.

Possible total earnings.

Enthusiasm created for that product (by manufacturer, distributor, dealer, utility, or electrical league).

Public interest in the appliance.

Dealer's interest in promoting a particular product.

Amount and type of competition.

Advertising and promotional backing.

Natural product features appeal.

Training and education.

Opportunities to advance.

Sincere belief that his product serves a need.

Coordination of all promotion towards ultimate retail sale.

VI Advertising and Promotion 'Urge'

Coordinated and timely selling advertising in local papers and on radio.

Presentations to club groups—parent teacher's associations, etc.

Timely sales campaigns backed up with proper window displays, salesman follow through, etc.

Demonstrations (store and home).

VII Local Utility 'Push'

VIII Electric League's 'Coordinated Drive'

Altogether, it's a big order. On the surface it would appear as though the statistical angle of establishing local potentials, the angle we usually think of as 100% of our problem, is actually, after all, only a small part of the whole subject.

As a matter of fact, I have suggested no less than 53 points here that must be taken into consideration in establishing proper appliance potentials, *in addition to* the statistical angle. Because whether you take these 53 things into account or not, they will actually be at work affecting the potential.

Unfortunately, very few of these 53 things can be weighed or evaluated on a strictly mathematical basis. But they must be carefully taken into consideration as "plus" or "minus" factors as you establish the final actual unit or dollar local appliance potential.

That is where your judgment enters the picture. That is where you and only you, with your intimate first-hand knowledge of the local market, must play the major role.

Well, that is the story as one man sees it. The problem is directly in your hands. The job is no easy one, but the course is clear.

Table 6—Estimating the Overall Postwar Demand For Electric Refrigerators in 'Market A'

The 1940 Census Shows—				
Domestic Electric Customers			61,535	100%
Mechanical Refrigerators in Use			39,772	65%
Estimated Electric			36,572	60%
Estimated Gas			3,200	5%
Ice Users			17,197	28%
Total Potential Market			56,969	93%
The 1944 Estimate Is				
Domestic Electric Customers			70,184	100%
Est. Elec. Refrig. in Use April 1, 1940	36,572			
Sales—last 9 months of 1940	6,518			
Sales—year 1941	11,159			
Sales—year 1942	2,508			
Total	56,757			
Estimated Retirements	5,676			
Estimated Elec. Refrigerators in Use 1944			51,081	73%
The 1950 Estimate Is				
Estimated Domestic Electric Customers 1950			75,000	
Est. of Electric Refrigerators in Use	85%	or	63,750	
Prewar Refrigerators in Use by 1950 (11 year average life)				
Sales 1938	3,658			
Sales 1939	6,097			
Sales 1940	9,311			
Sales 1941	11,159			
Sales 1942	2,508			
Total			32,733	
Estimated Potential Demand from Beginning of Production to 1950			31,017	

CORDLEY
THE BATTLE PROVEN
Electric
WATER COOLERS
THE PROVING GROUNDS OF WAR offer dramatic confirmation of the ability of Cordley Electric Water Coolers to withstand hard knocks. Supplied since 1942 for shipboard use to the Navy (Contract NXs 9982) and to the Maritime Commission. These same Battle-Proven Coolers are now available for essential uses on land. Write for facts.

CORDLEY & HAYES
452 Fourth Ave., New York 16
Manufacturers of Water Coolers For 55 Years

WADSWORTH SKILLS

WADSWORTH FACILITIES

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CURRENTLY SERVING THESE INDUSTRIES

Aircraft
Automotive
Bearing
Electronics
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Machine Tool
Small Arms
Refrigeration

• • • built up through half a century of leadership in the exacting Watch Case Industry will be available soon to many manufacturers who will require large quantities of small precision parts for their postwar assemblies.

Work of this character is now being supplied to many leading companies which normally produce radio equipment, refrigerators, automotive parts, precision instruments.

Illustrated are nine small components of an Ordnance assembly which Wadsworth furnishes in great numbers. The production of these pieces, which are held to very close tolerances, brings a score of special Wadsworth facilities into play.

Wadsworth workers' feeling for precision and their ability to get work out on time will ease postwar headaches for many producers.

ARMY E NAVY

SMALL PARTS DIVISION

THE Wadsworth WATCH CASE CO., Inc.

DAYTON, KENTUCKY, SUBURB OF CINCINNATI, OHIO
PHONE COLONIAL 8194 • (CINCINNATI EXCHANGE)

★

Completely Automatic Refrigerated Trailer Being Produced by Fruehauf

By Ross Potter

DETROIT — A completely automatic refrigerated trailer, produced to answer wartime demands for increased overland food transport, has been placed on the market by Detroit's Fruehauf Trailer Co.

The Trail-Aire refrigerating unit is built and installed by Advance Mfg. Co. here, but Fruehauf will sell the complete trailer through its 59 dealer and distributor outlets in 34 states.

Advance Mfg. Co. was organized in 1933 to produce parts for the automotive industry. In April of this year Advance purchased Motor Truck Refrigeration Co., a pioneer in that field of engineering, bringing to Advance two of Motor Truck's key men: Walter G. Carlson, now sales manager for Advance, and Henry Kirkpatrick, its refrigeration engineer.

The importance of the problem of trailer refrigeration has been given fair recognition in the persistence of the different methods tried during the past 10 years.

Wet ice and dry ice both have been tried, but have not proved entirely satisfactory. High relative humidity resulting from the use of ice tends to produce these three conditions:

1. The product being hauled becomes damp and "mossy." 2. Wet containers and slippery flooring underfoot create a definite safety hazard. 3. The trailer lining and flooring evenutally rot, causing trailer lay-up for repairs that cost extra time, manpower, and replacement materials.

The use of closed containers holding chilled brine has been tried, but this calls for replacement of the brine tanks along the way, again with considerable loss in time and convenience.

Mechanical refrigeration has been applied in various applications, with the unit sometimes outside the trailer, sometimes in. Mounted on the outside, the unit works against conditions of dust, weather, and, along the seaboard routes, against the corrosive effects of salt water.

The completely self-contained unit gradually has come into focus as the practical solution; but even that idea has had its bugs, and the majority of truck coolers today are not the self-contained type.

Major difficulties to be met have been inaccessibility, and the absence of heat-producing equipment which could cut defrosting time to a minimum and protect such produce as eggs, lettuce, or potatoes from being frozen during winter hauls.

The Trail-Aire unit apparently has solved both these requirements. The side wall of the machine compartment is removable for major servicing access. Minor servicing needs are effected through the service door in the trailer's nose.

The unit's reverse cycle is regulated by manual control valves accessible through the service door (Fig. 1). The three top valves open the refrigeration circuit, the three below them alternately will open the heating circuit. The button panel at their left starts operation for either system.

The single-pole, double-throw switch at top left is actuated by a liquid-charged thermostatic element, and exercises its control whether the unit is being used for heating or cooling. The dial responds to 1° F. graduations.

With the entire assembly set in the nose of the trailer, the evaporator housing and assembly are protected by heavy-gauge sheet steel to withstand the impact of cargo moving in transit (Fig. 2).

Here also are mounted the thermostatic expansion valve, heat exchanger, dehydrator, strainer for the expansion valve, and a single-width positive centrifugal-type fan and housing for passing circulating air through the evaporator coil.

A condensation drain line (center panel, right) carries condensed moisture from the drip pan above and routes it under the evaporator coil to a vent outside the trailer. The condenser coil (right panel, center) acts as a condenser when cooling the trailer, and as an evaporator when heating it.

When the trailer is being cooled, the sliding door to the right of the coil (handle shows in right panel, top) remains closed. When heating, the opened door allows heat from the unit's gasoline-powered engine to pass through the condenser coil and warm the refrigerant. This patented feature makes the unit an efficient heater regardless of outside temperature.

This Is It

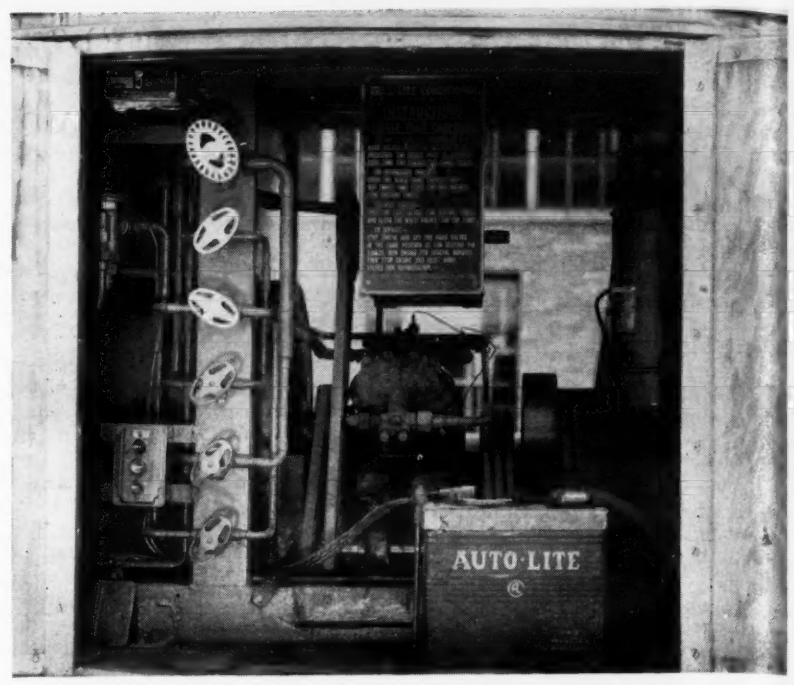


Fig. 1—The top three manual-controlled valves seen here open the unit's refrigeration cycle when the lower valves are shut. Opposite manipulation allows defrosting, or heating the trailer during winter haulage.

Fig. 2—Looking forward. Heavy sheet steel protects the unit from the impact of any cargo shift during transit. Gasoline engine is four-cylinder, V-type, air-cooled. Compressor capacity is 24,000 B.t.u. an hour at 20° F. evaporator and 100° F. ambient temperatures. Refrigerant: methyl chloride now, "Freon" when available.

CHECK ✓ AND DOUBLE CHECK ✓ ✓

IN EVERY STAGE OF PURCHASE AND PRODUCTION COUNTLESS TESTS ASSURE DEPENDABILITY OF WHITE-RODGERS CONTROLS

Checking concentricity between thread diameter and outside diameter of unit nut—held to close tolerance for proper calibration.

The accuracy and dependability of White-Rodgers temperature and pressure controls begins *when materials enter the factory.*

Every part, every assembly is checked and double checked to make sure it will perform the function for which it was designed.

These preliminary tests plus the rigid final inspection of the finished White-Rodgers control are reflected in the performance of your own equipment.

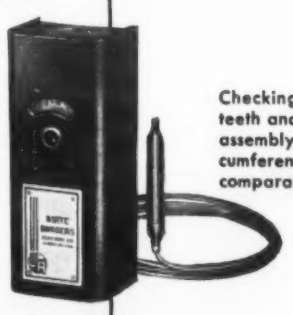
Write for your copy of the White-Rodgers catalog today!

Electrically and mechanically checking spring pressure to assure complete range of control operation.

Checking form of gear teeth and relation to shaft assembly over entire circumference by exacting comparator method.

8 EXCLUSIVE FEATURES OF WHITE-RODGERS HYDRAULIC-ACTION TEMPERATURE CONTROLS

1. May be mounted at any angle or position, above, below or on level with control point.
2. Hydraulic-Action Principle incorporating solid-liquid filled bulb and capillary provides expansion force comparable to that of a metal bar.
3. Diaphragm motion uniform per degree of temperature change.
4. Power of solid-liquid charge permits unusually sturdy switch construction resulting in positive contact closure.
5. Heavier, longer-wearing parts are possible because of unlimited power.
6. Dials are evenly and accurately calibrated over their entire range because of straight-line expansion.
7. Controls with remote bulb and capillary are not sensitive to change in room temperature. Accuracy of control is not affected by temperature changes in surrounding area.
8. Not affected by atmospheric pressure. Works accurately at sea level or in the stratosphere without compensation or adjustment.



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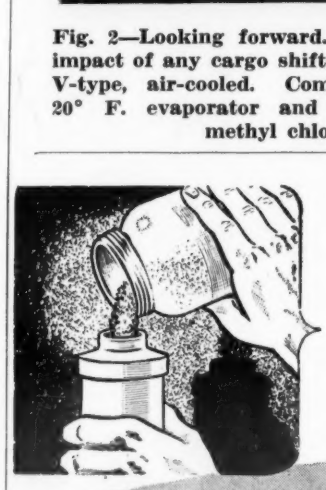
Controls for Refrigeration • Heating • Air-Conditioning



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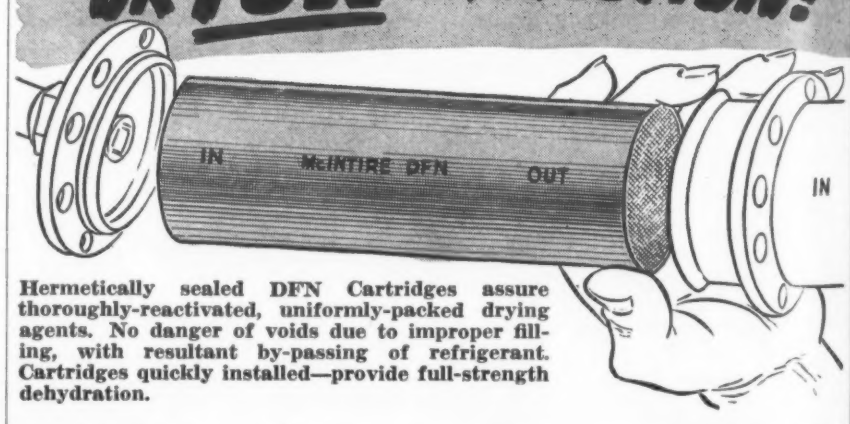
When refilling dehydrators with bulk dr ing agents, moisture is rapidly adsorbe from the air—dehydrating capacity reduced — packing is loose and no uniform.

OR FULL PROTECTION!



Hermetically sealed DFN Cartridges assure thoroughly-reactivated, uniformly-packed drying agents. No danger of voids due to improper filling, with resultant by-passing of refrigerant. Cartridges quickly installed—provide full-strength dehydration.

The DFN System gives *FULL* protection from every angle—because it is the *only* system that safeguards three ways! A DFN Cartridge dehydrates, strains and filters, and neutralizes.

DFN Cartridges are mechanically packed with the correct quantity and density of reactivated drying agent for dehydrating and neutralizing. An exclusive anti-sediment assembly covers the *complete area* of the outlet with multiple layers of wire mesh, bronze wool and felt . . . hold more sediment without pressure drop . . . filters to minute size.

DFN demountable assemblies are avail able from 1 H.P. to 30 tons, with large safety factor. Ask your distributor —or write us for details.

McINTIRE CONNECTOR COMPANY
NEWARK 5 NEW JERSEY

Only the DFN SYSTEM DEHYDRATES FILTERS NEUTRALIZES

DEHYDRATORS • STRAINERS FILTERS • NEUTRALIZERS

Super Bazooka

Betty Brandt of the General Electric Co., Bridgeport, holds the new bazooka designed by the company for the field artillery. The new weapon is portable, and may be carried and fired by one man. It is set up on a tripod and fired, however, not from the man's shoulder.

Bendix Coast Dealers See New Sales Aids

SAN FRANCISCO—Leo J. Meyberg Co. of San Francisco, recently completed the first series of appliance dealer sales meetings since 1941. Meetings were held in Fresno, Sacramento, and San Francisco under the direction of W. J. Lancaster, vice president, San Francisco division and R. C. Christiansen, sales manager, Bendix division. Over 200 Northern California dealers attended.

Subject of the conclaves was the presentation of the advertising and merchandising program soon to be launched by Bendix Home Appliances, Inc. Dealers were offered the opportunity to sign up for point-of-sale merchandising aids. These included Neon signs, floor and window displays, envelope stuffers, and over the-counter hand out sales literature.

Unique feature of the meetings was a "talking" Bendix. A loudspeaker was mounted in a Bendix machine, the speaker cone being placed in the Bendix porthole. A remote control microphone located off stage made it possible to play the entire outline of the meeting through the spotlighted Bendix unit.

Gilmer BELTS

Dealers who stock Gilmer Belts, for replacement on air conditioning and refrigeration units, do a profitable service business.

Gilmer Belts are rugged, long-lived, and efficient, built to do the best job possible for the user. Get hold of your Gilmer jobber today . . . be ready for more business.

L. H. GILMER COMPANY
Tacony, Phila. 35, Pa.

Regulations Changed On Stove Rationing

WASHINGTON, D. C. — Several minor changes in stove rationing regulations were announced Oct. 31 by the OPA.

One of the new provisions will make ration certificates for coal-gas combination stoves more readily available to consumers. This is being done because supplies of this type of combination stove have shown a moderate increase. The change will permit persons who are eligible for cooking stove certificates to obtain certificates for coal and gas combination stoves if they want this type of equipment. Previously, an applicant had to establish eligibility for both a cooking and a heating stove in order to get a coal-gas combination.

Other changes are of interest chiefly to the trade. Made in recognition of practices customary in the stove industry, they are as follows:

1. Dealers and distributors who store their stoves at places other than the one where all orders are accepted, may consider these places of operation as part of one establishment and register them as such. They may correct and consolidate their registrations at their local War Price and Rationing Boards.

2. The regulations that permit distribution through exclusive sales arrangements—made with one stove dealer or distributor in a given area—are broadened to allow manufacturers and distributors to continue these special sales understandings with more than one dealer in an area. This is a customary trade policy and can be permitted without detriment to the over-all distribution of stoves.

Hills Heads Wesco Stores

DETROIT—Robert Hills has been named central district stores manager of the Westinghouse Electric Supply Co.

Mr. Hills joined Westinghouse in 1935, and since then has held positions in the credits, quotations, claims, and stock departments of the Toledo branch. In 1942 he was made service manager at Toledo.

8 Distributors Named by Gibson

GREENVILLE, Mich.—Gibson Refrigerator Co. has appointed eight new distributors to handle the Gibson line of refrigerators, electric ranges, and home freezers. The new appointees are:

Jackson Distributing Co., Salt Lake City, Utah; Rudning-Robertson Co., Sioux Falls, S. D.; Radio Specialty Corp., New Orleans; Morris Spitzer, Erie, Pa.; General Marine Supply Co., Charleston, S. C.; Leo Maxwell Co., Oklahoma City, Okla.; Johnson-Price Co., Amarillo, Tex.; and Phillips Hardware Co., Cambridge, Md.

South Bend Office Opened By Cutler-Hammer

MILWAUKEE — Cutler-Hammer, Inc., has opened a sales office at 108 North Main St., South Bend, Ind. Terry Fisher, Cutler-Hammer South Bend representative, will be in charge.

Proctor To Go Through Distributors Only

PHILADELPHIA — Proctor Electric Co. here, manufacturer of traffic appliances (irons and toasters), will distribute its products postwar through wholesale distributors exclusively, it has announced.

Prior to the war Proctor Electric sold direct to many department stores in key cities.

The company plans to produce first such items as the iron and toaster which it made prior to the war, but other items, such as an electric roaster and an electric waffle iron, are planned.

New Firm In Glendale

GLENDALE, Calif.—Refrigeration Service is the firm name under which Charles M. Keith has published a certificate that he is conducting business at 210 South Central Ave., Glendale.

A bit of an exaggeration, perhaps, but the Bendix Automatic Home Laundry dealer is a hero with women everywhere! The gals know that he holds the "Open Sesame" to the one-and-only Bendix—that he's even now registering name after name to buy this amazing automatic home laundry—when Bendix is back! Behind him—with its unequalled sales punch—is the new Bendix advertising campaign. In Life, McCall's, Parents', True Story, Better Homes & Gardens, American Weekly, Good Housekeeping, 23 Sunday newspaper supplements—and on the air everywhere! No wonder, millions of women want the Bendix Automatic Home Laundry—want it more than any other make of washer! And their number is growing. A vast, ready market for the lucky Bendix dealer!

BENDIX automatic Home Laundry

BENDIX HOME APPLIANCES, Inc., South Bend, Indiana . . . Pioneers and Perfectors of the Automatic "Washer" . . . Not affiliated with any other organization of similar name

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What's the Score On Television?

TELEVISION for homes is an exciting prospect. Most consumer preference surveys show that it ranks almost alongside home air conditioning as a prime want among War Bond holders when they stop to consider what they are saving for in terms of things they do not now own.

It now seems indisputable that the motion picture and radio broadcasting industries (which are becoming more and more integrated) are not asleep to television's possibilities. After all, these mass-produced entertainment media control most of the talent and know-how which television will have to have if it is not to be a "bust." And they are in position to control the means of transmission of entertainment, no matter what form that means may take.

The movie-people may be expected to be johnny-with-the-bucket when it comes to televising football games, the World Series, big prize fights, political conventions, the Kentucky Derby, and other prime newsreel items. They also have available the screen plays which will be most susceptible to successful televising.

FIRST SHOWINGS IN THEATERS

On "television night" the Hollywood-controlled movie houses could dispense with the sad second feature and provide in its stead the telecast of an important event, or an on-the-spot dramatic broadcast. Think of the crowds such new-type entertainment might draw!

This monopoly of entertainment talent on the part of movie producers and radio broadcasters does not, however, mean that local telecasters cannot find outlet for their possibly less glamorous programs.

The very existence of home television reception is expected to be sufficiently exciting to provide a tremendously profitable market for local advertisers during its initial years, in that the possessors of the early television receiving sets will probably look with awe at almost anything which comes before them on the home screen.

This enthusiastic "pioneer spirit" makes possible the projection of local window displays into the home, and the presentation of national promotional programs on an intimate local scale. And the use of "home talent" in smaller communities will be sure-fire.

Television is such a "natural" that all its omigodders are sure to be confounded when it flowers into full bloom. That's because it will fulfill a fundamental human want: the desire to *see* as well as *hear,* in the home, events which occur anywhere else in the world.

For advertisers, too, it eventualizes a basic need: it takes point-of-purchase merchandising into the home of the prospect, and displays the offered products almost as well as if a Fuller-brush-salesman had pushed his foot through the door and laid out his wares on the davenport. (Mind you, television will "get inside" scads of homes into which the brush salesman could never pry entrance.)

LIMITED MARKET AT FIRST

If the war should end tomorrow, the prospects for television receivers would necessarily be limited to the communities now served by television broadcasters. These include New York, Philadelphia, Schenectady, Chicago, and Los Angeles. But in very short order the following cities would add telecasting facilities: Detroit, Cincinnati, San Francisco, Cleveland, New Orleans, Denver, Salt Lake City, and Washington, D. C. Other major marketing areas are sure to provide local telecasting facilities in due time.

The beauty of this now-limited situation is that the hopeful commercial telecaster can experiment in this new medium at relatively low cost during the interim period before national facilities are available.

It may take five years before 100 telecasting stations are firmly established. In the meantime, the broadcaster can try his art on 40 or 50 key-market stations (with an attendant 30 to 40 million receivers avidly tuned to his efforts—and wares). This means slow, healthful development of all phases of the business.

One thing the war has made possible is relatively low-cost broadcasting and receiving sets for television. Fundamentally, radar is television, in terms of equipment. Vast expansion—financed by the government—of our producing facilities for turning out radar will permit volume production of the big cathode ray tubes which television sets require—at an absorbable cost. The same holds true for the complicated telecasting stations.

Furthermore, war-stimulated improvements in this equipment will be quickly available. The entire industry has jumped at least two decades of normal progress under wartime-financed pressure.

The television-electronics-radionics industry will have no long-term problems of reconversion. About all they'll have to do is change the package, set the price, choose the distributors and dealers, and start promoting.

WHO WILL PAY THE BILLS?

There are canny economists who wonder who is going to pay the bill for television entertainment of a quality sufficiently high to satisfy the jaded and certainly discriminating American public (after the initial thrill of novelty is gone). They will remind you that the movie industry spends more than 300 million dollars a year just to provide 350 hours of entertainment for the avid movie-goer. They wonder if prospective television advertisers can be expected to pay the freight for the tremendously exacting requirements of television broadcasting (as compared with radio).

Enthusiasts answer these highly valid questions with the flat statement that television is bound to succeed because of its incontestible value as an advertising medium. They will cite you a long list of products which can far better be advertised via sight than they can via sound.

They say, as they peruse this list, that considerable numbers of manufacturing organizations which do not now advertise by radio will want to advertise by television. They say, further, that the *entire-television program* can be made acceptably "commercial," as contrasted with the radio entertainment program on which the "commercial" announcements are often resented.

New products can be displayed (with ensuing news interest), fashion shows and display windows can be viewed, use-of-the-product can be demonstrated, and all the *action* features of advertising can be ushered into the comfort of home by television. The eye is not affronted, they say, by things the ear resents.

So it is that the enthusiasts predict: television can't miss. They believe that the advertising charges, though undeniably and necessarily high, will be paid. And they believe, furthermore, that the challenge of these admittedly exacting program production problems will be met, eventually, after much trial-and-error.

They agree that the television audience will be smaller, but they also insist it will be more attentive. Some say that this attentiveness will be more critical; others feel that it will be simply mouth-ajar, receptive to an extraordinary degree to anything the broadcasters put out.

CURIOSITY & PRIDE-OF-POSSESSION

Nearly everybody believes, it should be stated, that there will be large numbers of prospects for television receiving sets *at the outset* among those to whom Pride of Possession is, consciously or unconsciously, a primary reason for the expenditure of saved funds. Curiosity alone will sell the product at first.

One last pessimistic consideration is the fact that television reception requires concentration on the part of its audience. You can listen to a radio and at the same time read, play bridge, knit, eat dinner, or dust the living room furniture. But you have to watch television, and give it almost undivided attention.

Once standards have been set by the Federal Communications Commission, every major city in the United States will have a television station just as quickly as transmitter deliveries can be made at the end of the war, it is predicted by James R. Carmine, vice president in charge of merchandising for Philco Corp.

It may be possible to produce and sell table model television receivers for as little as $125 after the war, Mr. Carmine believes. Larger "projection-type" sets, giving a picture 24 inches by 18 inches may cost up to $400; and "combination" sets as much as $750 and even more.

They'll Do It Every Time

By Jimmy Hatlo

DO WHAT I TELL YOU AND YOU'LL BE LIKE A NEW MAN IN A JIFFY. TAKE A RAW EGG AND CHILI IN BLACK COFFEE--
NO--LISTEN TO ME. SNEAK OVER TO THE DUTCHMAN'S. TELL HIM TO MIX YOU A "VIOLENT WARD SPECIAL". IT'S TOMATO JUICE, MINT, BITTERS, AND A LITTLE CIDER--
POOR LUSHWELL--THOSE GUYS MEAN WELL, BUT THE CURES THEY'RE PRESCRIBING WILL JUST ABOUT FINISH HIM--
I NEVER MET A GUY YET THAT DIDN'T HAVE A PET THEORY ON CURING THAT BAR FEVER--
WHAT I WANT TO KNOW IS HOW THOSE TWO PILLARS OF THE COMMUNITY GOT NEXT TO THE MORNING-AFTER CURE-ALLS--
THEY'RE TALKING THROUGH THEIR FEDORAS THE ONLY REMEDY IS THE BITE OF THE DOG--
IT'S LIKE HAVING A COLD--EVERYBODY KNOWS WHAT TO DO ABOUT IT--BUT NO TWO AGREE--
Thanks To E. B. BENDER, CHICAGO, ILL.
1-6
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In Philco Post

JOHN F. GILLIGAN
Who has just been appointed advertising manager of Philco Corp.

Michigan Utility Takes Appliance Orders Now

GRAND RAPIDS, Mich.—First newspaper announcement that the Michigan Consolidated Gas Co. here was taking orders now for postwar delivery of gas refrigerators and automatic hot water heaters brought in 50 orders during the first week, according to Wallace M. Chamberlain, sales manager.

Prewar (1942) prices are guaranteed under this plan, with the proviso that a model comparable in value to the 1942 model will be delivered when available. By making advance payments totaling 75% of total cost before delivery, the buyer can earn a 5% discount. Under this deferred delivery plan, the purchaser is required to make a down payment of 10%.

When received, the deferred delivery orders are given a numerical preference rating, so that the first order in will be the first filled, it was said.

The plan was first started by the utility earlier this year but was applied only to water heaters. Since water heaters are available, deferred delivery sales of postwar models have not been large, Mr. Chamberlain said.

WPB Cuts Off Wire Supply To Service Co.

MOSCOW, Ida.—L. Rosgen, operator of the firm, Mac's Radio here, has been prohibited from purchasing copper wire for a two-month period following what the War Production Board alleges are two violations of CMP Regulations No. 9 and 9A.

During the fourth quarter of 1943, the firm purchased copper wire of the value of $1,127.22 in excess of that allowed as a retail dealer and repair shop, and during the first quarter of 1944, the firm's copper wire purchases exceeded the amount permissible by $316.89, according to WPB charges.

Edison G-E To Open Office In the Mart

CHICAGO — Edison General Electric (Hotpoint) Appliance Co., will establish central region sales offices and merchandise display rooms Dec. 1 in the Merchandise Mart, Chicago, according to W. H. BonDurant, regional manager.

When equipment is available, the offices will house displays of complete "all-electric" kitchens, complete home laundries, and commercial cooking equipment.

The central region includes the Chicago sales district, which will headquarter in the new offices under the direction of L. E. Buxton, district manager.

Motor Industry Committee Named To Work on Pricing Problem

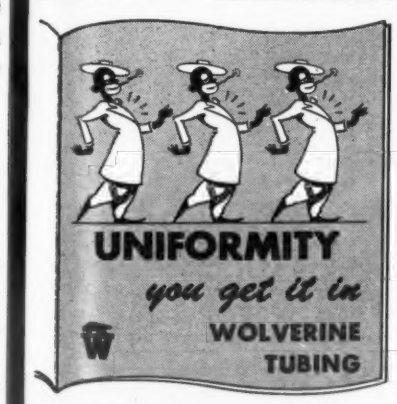
WASHINGTON, D. C.—Appointment of an industry advisory committee to assist the Office of Price Administration in problems that may arise in reconversion pricing of fractional horsepower electric motors was announced by that agency.

There are approximately 135 fractional horsepower electric motor companies in the United States, the majority of them being situated in the Middle West.

Members of the Fractional Horsepower Electric Motor Industry Advisory Committee are:

A. M. Bartling, General Electric Co., Fort Wayne, Ind.; W. R. Clements, Master Electric Co., Dayton; Paul D. Dale, The Leland Electric Co., Dayton; Charles Dunham, Electric Motor Corp., Racine, Wis.; W. H. Eldridge, The Holtzer-Cabot Electric Co., Boston; R. J. Russell, Century Electric Co., St. Louis.

W. R. Frazer, Emerson Electric Mfg. Co., St. Louis; Hjalmar Hertz, Diehl Mfg. Co., Somerville, N. J.; H. A. Hudson, Wagner Electric Corp., St. Louis; R. L. Irvin, Westinghouse Electric & Mfg. Co., Lima, Ohio; R. J. Montgomery, Packard Electric Div., General Motors Corp., Warren, Ohio; F. W. Smith, Robbins & Meyers, Inc., Springfield, Ohio; J. J. Wall, Marathon Electric Mfg. Co., Wausau, Wis.



NATIONALLY ENDORSED

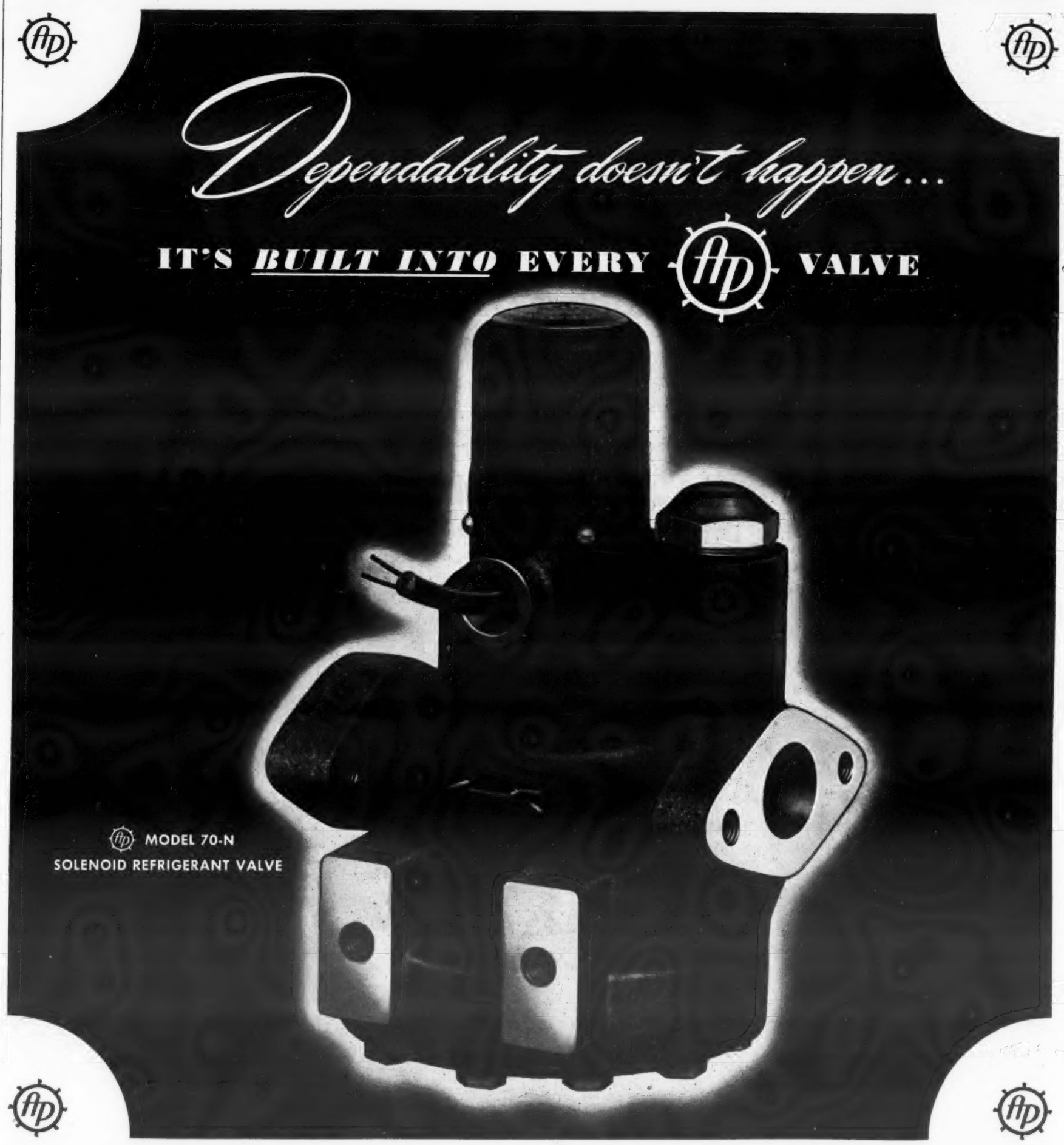
Pad is adjustable to all makes and sizes of refrigerator cabinets; thoroughly protects finish of cabinet from scratches and mars during moving; easily and quickly put on or off; sturdy, lasting construction; easily pays for itself in a short time. Price $11.75 each.

Attractive lettering of your name on pad at $2.00 each extra.

For carrying your refrigerator more safely and easily, use the Mastercraft Adjustable Carrying Harness which is a separate unit from the pad and priced at $8.50 each.

Write for complete folder and prices on pads for refrigerators, washers, ironers, ranges, radios; also furniture pads and protective covers. . . . All prices subject to change without notice.

BEARSE MANUFACTURING CO.
Incorporated 1921
3815-3825 Cortland St., Chicago 47, Illinois



With a reputation for dependable operation, trouble-free service and leakproof safety, the A-P Model 70-N Solenoid is popular for liquid and suction line control on refrigeration and air conditioning applications up to 53 tons Freon. With its impact type plunger and by-pass principle of operation, the 70-N opens easily and efficiently under high pressures, and with low power consumption. Available with a wide range of flange sizes, cycle and voltage ratings, with a maximum operating differential pressure, of 200 lbs. For additional data, write for bulletin No. 402.

AUTOMATIC PRODUCTS COMPANY
2450 North Thirty-Second Street Milwaukee 10, Wisconsin
Export Department — 13 E. 40th St., New York 16, N. Y.

DEPENDABLE
REFRIGERANT VALVES
STOCKED AND SOLD BY PROGRESSIVE REFRIGERATION JOBBERS EVERYWHERE —
RECOMMENDED AND INSTALLED BY LEADING REFRIGERATION SERVICE ENGINEERS

Middle East Export Items Listed by U. S.

WASHINGTON, D. C.—Commodities that may be exported to the countries of the Middle East from the United States have been listed in a bulletin to exporters by the Foreign Economic Administration, the agency said recently.

United States commodities included in the list, mailed to exporters in Current Export Bulletin No. 202, are divided into several general categories—food, drink, and tobacco; chemicals; drugs and health supplies; rubber; lumber; paper; textiles; nonmetallic minerals and manufactures; metals; engineering supplies, machinery and apparatus, appliances and vehicles; and miscellaneous commodities.

Although this information has not heretofore been made public, it has now become possible to provide it for the guidance of American exporters. The British government is simultaneously notifying British exporters of United Kingdom commodities that may be exported to the Middle East.

The list of individual items is constantly being revised, and additions or changes will be published from time to time by FEA in subsequent Current Export Bulletins. Except in special cases it is unlikely that applications will be approved for items not on the list.

The Middle East countries to which United States commodities listed may be exported are: Aden and Aden Protectorate, Anglo-Egyptian Sudan, British Somaliland, Cyprus, Eritrea, Egypt, Ethiopia, French Somaliland.

Iran, Iraq, Libya (including Cyrenaica and Tripolitania), Palestine, Saudi Arabia, Syria and the Lebanon, Transjordan, Yemen.

Export licenses for shipments to the Middle East will be granted by FEA only within the limits permitted to be exported from the United States by U. S. governmental supply authorities and within the limits authorized by existing Middle East import controls.

Applications for export licenses should be made to the Foreign Economic Administration, Washington 25, D. C.

Quick Reconversion Seen For Vacuum Cleaner Industry

WASHINGTON, D. C. — Domestic vacuum cleaner plants are ready to convert to civilian production when they are relieved of war contracts and materials and labor are available, the Domestic Vacuum Cleaner Labor Advisory Committee told War Production Board officials at a recent meeting.

To assure a smooth and speedy transition from war to peacetime production, committee members made the following two recommendations:

1. That a 30-day notice be given on all military cutbacks. This notice, they said, is particularly important to their industry since it must depend entirely on "spot authorization" procedure for any reconversion. The processing of applications under Priorities Regulation No. 25 takes as much as a month's time, committee members added.

WPB officials assured the committee that the Army is cooperating with WPB in atempting to distribute cutbacks so that civilian production will receive every consideration and so that unemployment will be minimized.

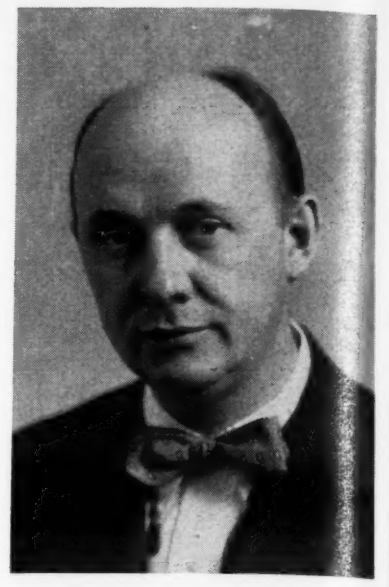
2. That a second priority rating band be retained for civilian production after "Victory-in-Europe" Day to insure a fair distribution of critical materials. This rating band would be in addition to the military and emergency ratings.

Production at 60 or 70% of the 1939 domestic vacuum cleaner production, which was estimated at approximately 1,430,000 units, can be achieved in the period immediately following the defeat of Germany, WPB officials said, emphasizing that this estimate is subject to change.

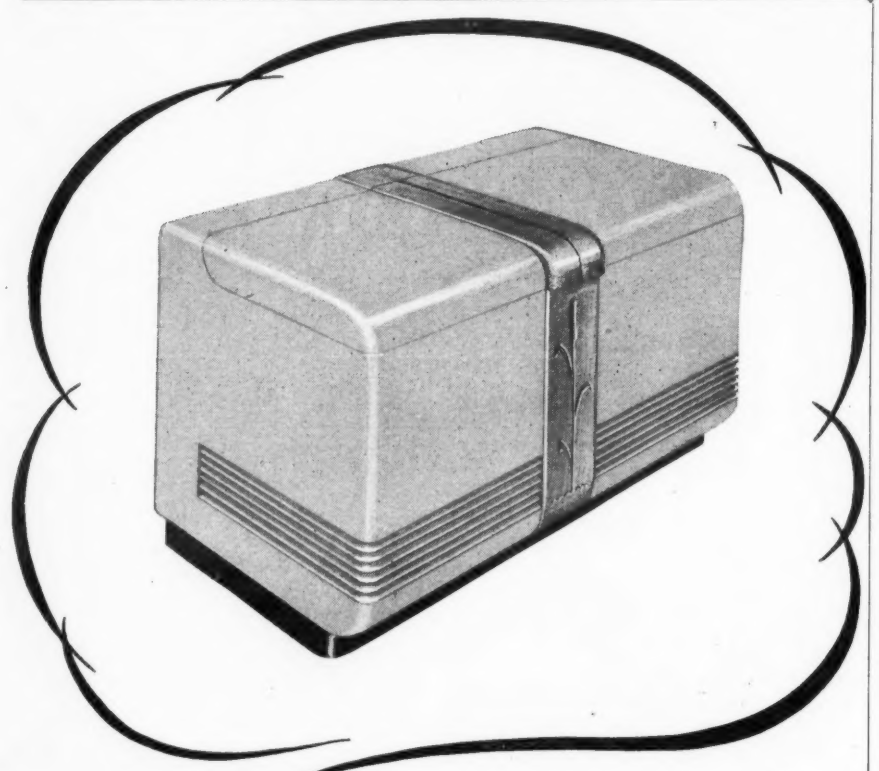
WPB officials said that in this particular industry, the "spot authorization" plan has been quite successful in lessening the impact of the transition period, adding that a few manufacturers have already received permission to resume production under the plan.

Committee members agreed that the ability of a company to return to civilian production under this regulation, which authorizes civilian production, subject to manpower controls, depends to a large degree on the accessibility of idle and excess inventories. They said that a rating of AA-5 would not be adequate for procurement of materials in tight supply.

Government officials reminded committee members that each WPB field office has a complete file of idle and excess inventories in the region and has access to catalogs of idle and excess inventories in other regions. These redistribution activities in the regional office serve as clearing houses for privately owned idle and excess inventories and they assist in the negotiations for purchase, WPB said.



Promotion of three Frigidaire executives was recently announced by H. M. Kelley, appliance sales manager. F. H. PETERS (at top) has been named manager of range and water heater sales; J. M. RUSHTON (at top right) now manages public utility sales; and J. A. MITZELFELT (at lower right) has been placed on special assignment in appliance sales.



In the "Post-War Plans" of many Farm Families--

The BEN-HUR Farm Locker Plant

Talk to any farmer about a farm locker plant and his first comment will be, "wish we had it now." And he'll follow with the promise that food freezing and frozen storage is the FIRST thing he's going to add after the war.

For most farmers already know the benefits of owning a BEN-HUR FARM LOCKER PLANT . . . the advantages of freezing and storing farm-grown vegetables, meat, poultry for delicious meal variety weeks and months later . . . the economy and savings in food costs . . . the satisfaction of preserving the finest of their own produce . . . the time saved in avoiding shopping trips to town.

This is evidence of your future market for new BEN-HUR FARM LOCKER PLANTS—a volume market ready just as soon as they can be produced.

Let us put your name on the list to receive complete data and sales information on BEN-HUR FARM LOCKER PLANTS, when this data can be released.

Today . . . back our fighting men with more war bonds

ARMY-NAVY "E" Awarded Ben-Hur for outstanding achievement in War Production.

BEN-HUR MANUFACTURING CO.
634 EAST KEEFE AVE. - MILWAUKEE 12, WISCONSIN

BEN-HUR FARM LOCKER PLANTS

Trane Coolers Employed In Water Distillers

LA CROSSE, Wis.—Exhaust gas coolers and after-coolers built in the Trane company plant here are incorporated in the water-distilling units manufactured by Cleaver Brooks Co., Milwaukee, Wis., which transform salty sea water and contaminated water unsafe for drinking into pure water that may be used for drinking and cooking by our fighting men wherever they may be.

Mounted on skids, these important distilling units accompany troops ashore and to forward areas moved by engineer battalions.

The compression-type distillation unit produces approximately 175 gallons of drinkable water each hour and for every pound of gasoline consumed.

Constructed of stainless steel, the Trane exhaust gas cooler used in the distiller uses the heat generated in the exhaust gases to heat the incoming sea water, which is piped to the boiler where the salt is removed.

Making it possible for the purified water to be drunk as soon as it comes from the distilling machine, the Trane after-cooler uses incoming sea water as a cooling agent to remove the heat from the out-going water which has already been distilled.

KEY TO A BILLION DOLLAR HOME 'FREEZER' MARKET

M & E FRACTIONAL H. P. UNITS DESIGNED FOR LOW, COMPACT MOUNTING AREAS

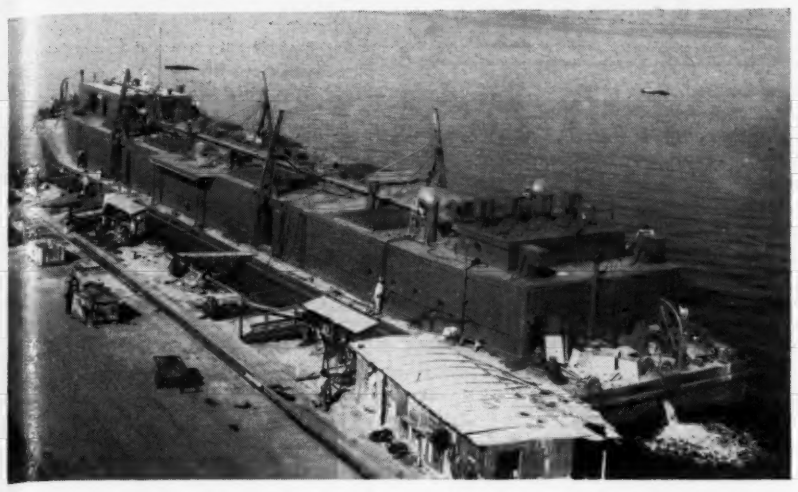
M&E was one of the first to design and manufacture the so-called "package" unit for small, self-contained cabinets. These units packed extra power and capacity in a comparatively small overall size ★ If you are going after the domestic or farm market for freezer or storage cabinet business we would like to talk to you now in advance of our actual production. The M&E Compressor line will be complete and versatile with integral units from 1/6 to 5 H. P.

★ A WORD TO JOBBERS, DISTRIBUTORS, MANUFACTURERS AGENTS, CABINET MANUFACTURERS.
Although we are not ready to make delivery it is not too early to discuss post war merchandising. Our plans are still flexible and we invite correspondence from responsible individuals and organizations interested in the sale or use of M&E refrigeration products.

MERCHANT & EVANS COMPANY
GENERAL OFFICES
2035 WASHINGTON AVENUE
Philadelphia 46, Pa.

Plant at Lancaster, Pa.

First 'Ice Cream Ship' To Serve U.S. Fighters



U.S.S. Hydrogen, said to be the first refrigerator ship of its type built in this country, will serve our armed forces in the South Pacific. It can carry 1,000 tons of fresh foodstuffs, and its refrigeration equipment will make 500 gallons of ice cream and 20 tons of ice daily. Part of the crew consists of refrigeration technicians recruited by the Army Transport Service.

• • •

Veterans See Refrigerator Ship As Big Help To South Pacific Forces

SAN DIEGO, Calif. — Carrying a thousand tons of fresh meat, fresh fruits, ice, and ice cream to American fighting men in the South Pacific, the *U.S.S. Hydrogen,* first concrete refrigerated "reefer" ship of this type to be built in this country, is on its way to war, relates a recent news story in *The San Diego Daily Journal.*

The newspaper quotes returned veterans from the South Pacific fighting zones as saying "the foodstuffs, particularly the ice and ice cream, will have a tremendous effect on the morale of the boys out there, especially the sick and wounded, and it will help them recover quicker than the dry rations some are now living on."

Built in National City, at the Concrete Ship Constructors south bay shipyard, the *U.S.S. Hydrogen* is 265 feet long with a 48 foot beam and a 15 foot depth.

The deckhouse is in three compartments. The refrigeration compressors, diesel power equipment, and other machinery are located in the forward holds. The central portion of the deckhouse is comparable to a huge refrigerator, with thick walls heavily insulated with fiberglass.

Five hundred gallons of ice cream and 20 tons of ice can be made daily on the ship. Throughout the length of the central section a monorail system of conveyors, of 2-ton capacity, can quickly load and unload cargo. The cranes travel on an overhead trolley and are electrically controlled from a master switchboard.

Vessels of this type will see front line action in the Pacific war zones. Moved into position during attack on main islands they will be camouflaged and serve as mobile refrigerators until the island is secure and permanent refrigeration equipment installed. The "reefer" ship will then be towed to the next scene of attack.

On the upper deck are quarters for a complement of 24 officers and men. The crew will consist of civilians, experts in refrigeration, ice making, diesels, and the electrical crafts who have been recruited for the Army Transport Service.

Two other similar ships are nearing completition in local shipyards, it is said.

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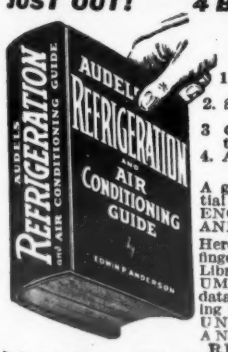
JUST OUT! 4 Books in One!



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1. Household Refrigeration
2. Special Refrigeration Units
3 Commercial & Industrial Refrigeration
4. Air Conditioning Systems

A gold mine of essential important facts for ENGINEERS, USERS AND SERVICEMEN.

Here you have at your fingers' ends a Complete Library in ONE VOLUME, the necessary data you have been looking for on: MODERN UNITS, SYSTEMS AND MACHINES, REFRIGERANTS, Including Freon, Quick Freezing, Lockers, Water Coolers & Air Conditioning Systems.

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QUICK SHIPMENT
SEND FOR COMPLETE CATALOG
FILTRINE MANUFACTURING CO.
53 Lexington Ave., Brooklyn 5, N. Y.
"Manufacturers For Over 40 Years"

Refrigeration Repair Shop Is Awarded Army-Navy 'E'

DETROIT — Lee-Sparling Co., which before the war operated a wholesale refrigeration repair business and motor rebuilding shop here, has just been notified that it will receive the Army-Navy "E" award for its work as a sub-contractor on Navy airplane parts, according to Clarence D. Sparling.

Not long after Pearl Harbor, Edward C. Lee, who has actively managed the firm since its formation nine years ago, started producing fine, precision parts on the single lathe the company possessed in its building at Hamilton and Kirby Aves. here for one of Detroit's largest automobile plants.

Specializing in precision production, the firm quickly grew from its one man-one lathe operation to the point where it now employs 40 persons in two shifts tending more than 20 machines, said Mr. Sparling.

Refrigeration repair work for service men has been continued at the same location, but the firm no longer operates the motor rebuilding service. Lee-Sparling is currently mapping plans for broad postwar expansion, according to Mr. Sparling.

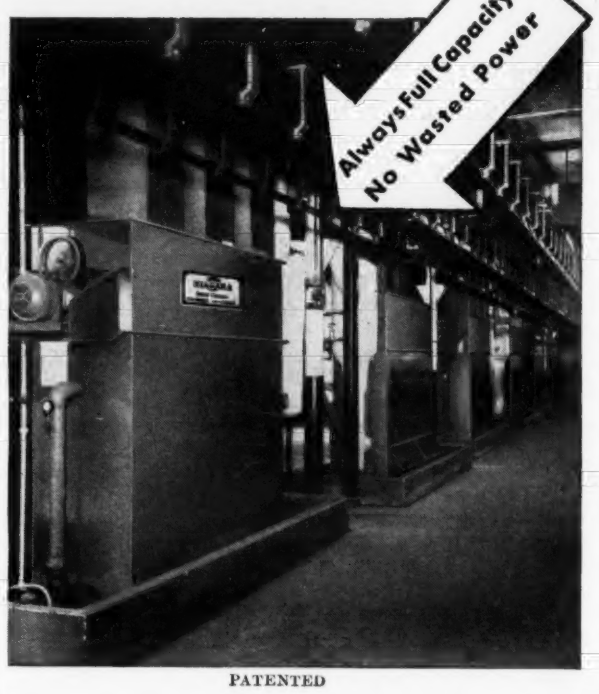
Crosley 9 Months Sales Show Jump

CINCINNATI—Net sales of $72,667,120 by The Crosley Corp., for the nine-month period ending Sept. 30, were reported last week to Crosley directors and stockholders by Powel Crosley, Jr., president.

This compares with net sales of $58,978,783 during the comparable nine-months' period in 1943.

Net profit for the first three quarters of 1944 was reported to be $3,571,388, as compared with net profit of $2,771,879 for the same nine months in 1943. These figures are after taxes and depreciation, but before reegotiation.

NIAGARA "No-Frost" METHOD



PATENTED

Improves Your Production

● Users of the NIAGARA "No-Frost" Method have better protection of quality in fresh or frozen foods, and save power and avoid troubles in operation.

1. Always uniform and full production capacity.
2. No progressive loss of capacity from icing.

You reach low operating temperatures quicker, obtain correct product interior temperatures more rapidly, hold them with less expenditure for power.

Write for Niagara Bulletins 83 and 95 and complete information on individual applications to different industries.

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NIAGARA EQUIPMENT FOR FOOD INDUSTRIES: AIR CONDITIONERS, DEHYDRATORS, COOLERS, "NO-FROST" METHOD OF PRE-COOLING, FREEZING AND HOLDING, AERO HEAT EXCHANGERS, "DUO-PASS" AERO CONDENSERS

HERE'S HOW . . .

Temprite Cooling Units Assure Cold Drinks In Your Beverage Dispensing Machine

YOUR COLD DRINK IS RIGHT WITH TEMPRITE—To better acquaint your engineering staff with Temprite Products and how they can be applied to your dispensing machine, we invite you to correspond with our sales department today.

Manufacturers: You'll certainly want to investigate Temprite Cooling units before deciding on postwar design of your beverage dispensing machine.

"Temprite" units are designed specifically for the dispensing of carbonated and non-carbonated bulk beverages in both automatic and manually operated beverage dispensing machines. Their compact size, large capacity and close temperature control make these units ideal for self contained beverage dispensing systems.

Temprite cooling units are extremely flexible in application and many unique and highly advantageous arrangements can be obtained with their use. Precooling water for use in automatic carbonators is one of many successful arrangements now in operation.

Temprite engineers are ready to cooperate with manufacturers in the design and production of special cooling arrangements, carbonators, dispensing faucets, and other equipment required for new style cabinet assemblies.

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Originators of Instantaneous Liquid Cooling Devices
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Food Lockers are the very heart of *your* plant. And it's *our* one and only *business* to supply the *finest food lockers* that can be made. Our plant facilities are geared to *specialization* in food lockers. Since these highest quality lockers are available for *prompt shipment*, let's talk business.

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WORLD'S FINEST ALL-STEEL
FOOD LOCKERS

6 Tier Locker Unit (4 Drawers)
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- Quality of materials, workmanship guaranteed.
- Heavy steel construction; rigidly reinforced.
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- Smart, modern, streamlined appearance.
- "Sno-White" baked enamel drawers and doorfronts.
- Smooth, easy-rolling removable drawers.
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- PERMATIZED . . . Special rustproofing of the steel before enameling prevents hidden rust chipping or blistering. No other manufacturer uses this special rustproof process.

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Off the Chest

HOUSING BOOM FORESEEN IN MIDDLE EAST

Eastern Trading & Agencies, Ltd.
Import, Export Representatives
Haifa (Palestine)
Beirut (Libanon)

Editor:

We are very much interested in the development of trade between the United States and the various countries of the Middle East.

The members of our company are merchants and general agents of good reputation and long high standing who have had much business experience in the Middle East markets. Our head office is in Haifa (Palestine), a branch at Beirut (Lebanon), and agencies in Syria, Iraq, and Trans-Jordan.

We do realize that at the present time there are so many difficulties arising out of war conditions such as quotas, import and export restrictions, etc. Still we are of the opinion, it is submitted, that it is very essential that the necessary contacts should be made now so that as soon as conditions return to normal or improve, our commercial transactions would be launched.

You may be aware of the acute housing crisis prevailing in the Middle East, and we are of the belief that its countries will prove to be excellent clients for their goods.

Therefore, we should be grateful if you would kindly put us into contact with the members of your industry, who, in your opinion, may be interested in fostering trade relations with the Middle East countries.

Immediate references may be obtained from our company from Messrs. Barclays Bank, New York Agencies, N. Y.

EASTERN TRADING & AGENCIES CO., LTD.

IMPORTER IN BAGHDAD SEEKS NEW LINES

Najib Abulkerim Sheikhmaya
Import, Export, Commission,
General Merchants
Samawal Street
Baghdad (Iraq)

Editor:

As we are specialized in the import and sale of this line of articles, we would be much obliged to you if you would put us in touch with some of your manufacturer members who wish to be represented in our territory and those who are seeking foreign business connection.

Although foreign trade is being restricted to a minimum at the present time, owing to the prevailing war condition, we are intending to arrange for postwar business possibilities. Should it be possible, the arrangements we may do with such firms will enable us to start an active business at the first opportunity.

You aid in this matter would be greatly appreciated.

Yours faithfully,
NAJIB ABDULKERIM

BUENOS AIRES 'RIPE' FOR AIR CONDITIONING

Sarmiento 459
Buenos Aires

Editor:

For the postwar decade I do not think there is a city of its size in the Western Hemisphere that will take more air conditioning and refrigeration equipment than Buenos Aires. My reasons for saying this are:

1. Just when the buying public here was becoming intensely interested in modern air conditioning and refrigeration equipment and had enough to realize its great advantages and want more, the possibility of purchasing supplies was stopped by the war. When American manufacturers are again in position to meet the demand large orders will originate in this market.

2. There is no city the size of Buenos Aires in the Americas which after the war will have more money to spend on such equipment because the big surpluses of cash piled up here during the present period of prosperity will not be required of the people for taxes.

3. Though the Buenos Aires public is just as ready as the public of American cities to buy such equipment the quantity already sold here is very small in relation to that already in use in American cities. As for the other Latin American cities, from personal experience, I know of not one as ready for air conditioning and refrigeration installations on a big scale as Buenos Aires.

M. T. MEADOWS

AMOUNT OF REFRIGERATION IN NEW GUINEA SUPRISING

481 Q.M. Refrigeration Co.
APO322, c/o Postmaster
San Francisco, Calif.
(New Guinea)

Editor:

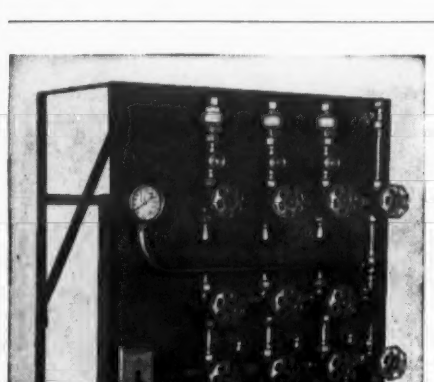
It has been several months since I have received a copy of the NEWS. Perhaps you have not received my present address and they are being forwarded around. I have been a subscriber for several years and have missed it recently. I find it quite difficult to keep up with what's happening in the industry without it.

Your "Information Please" column with questions and answers was very good and I would suggest that you have more articles on that order.

I think a lot of refrigeration men would be surprised if they could see all of the refrigeration equipment there is in New Guinea. Many makes are represented and the sizes range from small domestic units to 30-ton ice plants which are in some places. The amount of perishables that arrive are increasing all the time.

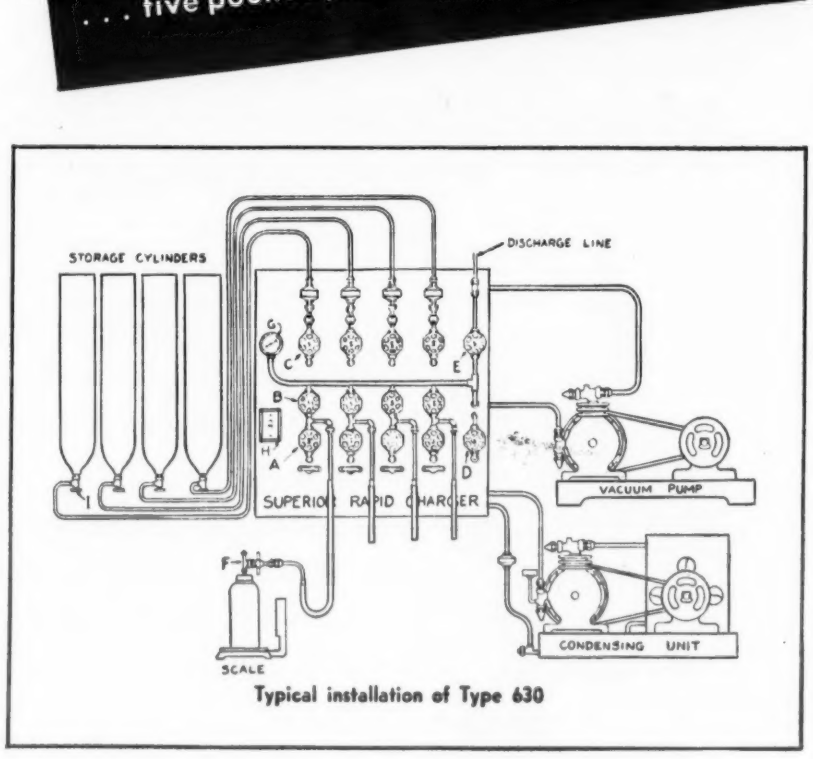
When my subscription expires please notify my brother, Dr. John R. Cobb, 44 East 82nd St., New York City, and he will take care of it for me.

SGT. RICHARD A. COBB



TYPE 630—

Superior RAPID-CHARGERS
. . . Hi-speed refrigerant transfer systems
. . . five pounds per minute by actual test.



Typical installation of Type 630

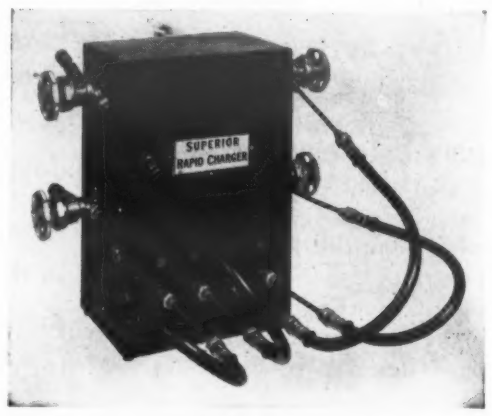
TYPE 630—illustrated above, is a complete refrigerant transfer system, with all equipment mounted on a special composition panel.

TYPE 631—illustrated below, is recommended for use where evacuation and discharge, and other facilities provided on Type 630 are not required.

RAPID-CHARGER is the result of careful study of all known refrigerant transfer methods, systems and problems pertaining thereto. It has instantaneous liquid coolers—one for each refrigerant to be transferred—connected in series with a refrigerating circuit, using a thermostatic expansion valve, and a small condensing unit with pressure control.

RAPID-CHARGER is fast—no valuable time lost in filling cylinders—no purging necessary. Refrigerant losses are practically eliminated.

If you haven't a copy of Catalog R2, request one today.



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No. 98

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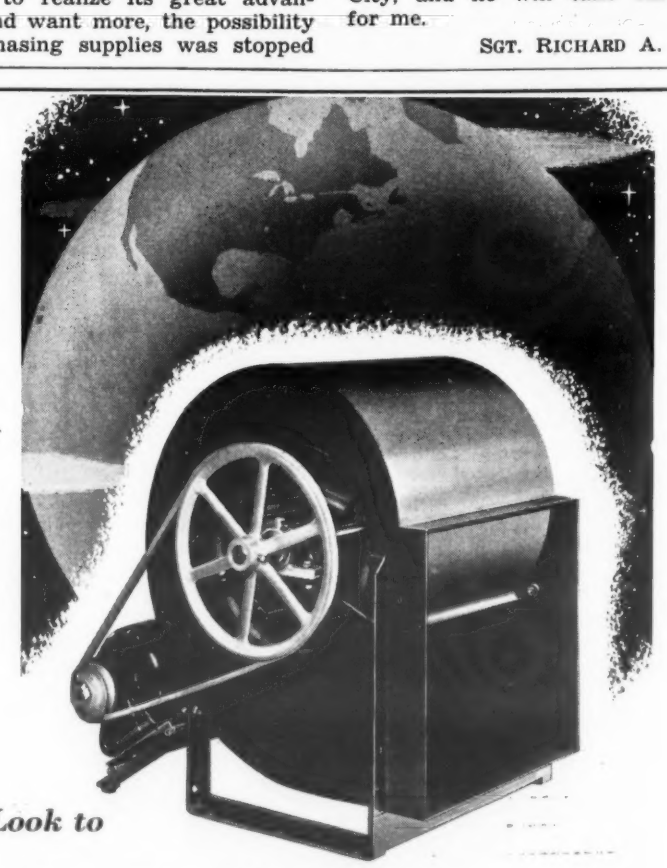
OFFICES IN PRINCIPAL CITIES • WEST COAST STOCK: LOS ANGELES (15) • JOBBERS EVERYWHERE



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Lau Blower Assemblies have been developed through years of experience and in accordance with approved principles of fan design. For your furnace and air conditioning equipment, they offer efficient air delivery with low power consumption. Double or single inlet. Top, side, or rear motor mountings. Dynamically balanced wheels. Self-aligning bearings. Widest range available. Greatest selectivity of air delivery. Every size tested and rated for performance in accordance with A.S.H. & V.E. and N.A.F.M. Codes. Get your orders in NOW. Write for complete description, simplified selector chart for sizes, capacities, etc., and prices. Lau engineers will serve you gladly.

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WORLD'S LARGEST MANUFACTURERS OF FURNACE BLOWERS

Engineers and fabricators of general Air Handling Equipment
Single Inlet and Double Inlet Blowers • Propeller Fans • Accessories

Off the Chest

REPAIRMAN'S PLACE IN POSTWAR SALES

Jackson Appliance Co.
409 West Capitol St.
Jackson, Miss.

Editor:

As the Chairman of the Program Committee of the Magnolia Chapter of Refrigeration Service Engineers Society I have tried to bring our group to the attention of the industry's outstanding manufacturers.

We have received splendid response and assistance from those whose interests lie in the commercial field. And although the manufacturers of domestic equipment have had the same opportunity to meet with us, without exception, they have neglected this chapter. Is this their general attitude?

We as a nation have come far since the days of Thomas Paine. Today we are trying men and machines as well as souls. On our home front we are fighting to keep in operation equipment that under normal conditions would have been replaced.

Our service men are using equipment that too frequently was removed for failure years ago, now reworked, that replaces ever shoddier parts. Our agencies are employing men with aptitude, but as yet without ability.

To answer today's problem we create a hundred for the future of the industry.

Through local organizations, city codification, and shop unionization, the refrigeration sales and service agencies are preparing for the postwar battle.

On the drawing boards of the manufacturers are the units of the future and now authorized are the materials for the experimental models. Draftsmen and graduate refrigeration engineers are much in demand. Yet every breakdown in the field can and to a large extent is, consumating the sale of the future.

We service men hear the lament and apology for the equipment on which we work. Hundreds of Mrs. Jones were just about to buy new refrigerators. Almost invariably she asks us what box to buy when they are again available.

It is a good question and the housewife has come to the right man for the answer. It is time that the manufacturer gave us some limb to crawl out on. Time the dealer knew to whom his former supplier would look for distribution. And time the service man could sell that name.

It is time that the mechanic received his proper recognition as a sales factor.

Not only has there been this lack of interest in service, but the staff has been alienated by long guarantees, low maintenance rebates, and failure to render assistance in service.

The manunfacturer will do well to contact the service department, to seek favor among the knuckle-busters, as well as the sales force and the cashiers, if the postwar period is to be half as competitive as we all anticipate.

It's a selling job.

This job will be done by the manufacturer who reduces his guarantee period. It will mean that the floor covering jobber wholesaling refrigeration units will employ trained service engineers to bring that training to the retailer. It might even lead to highside jobbers, instead of sideline distributors.

What service manager would not welcome a freedom from $2 service calls? Slipping and squeaking belts, loose pulleys, and the hundreds of other time consuming, small profit services gone forever.

Yes, there would be pesky condensers to brush, but the general run of minor maintenance and repair would be cold controls and relays. The sealed unit would be shop serviced without the long delay of factory replacement.

And Mr. Service Manager could take those more profitable installations and contact jobs with the assurance that he wasn't going to find a stuck compressor holding back production.

Manufacturers seeking and finding shop recognition for his product and policies need not look further for his sales force, his market, and acceptance. When Mrs. Jones asks, "What is wrong with my refrigerator?" the answer is no longer, "The nameplate."

But until the day that the manufacturer of the household mechanical refrigerator recognizes the service organizations and departments and begins to do a selling job there, more and more firms are going to hand out the "Commercial Only" sign and bless the open unit.

FRANCIS B. FRAZEE

WILL MEN IN SERVICE 'MISS THE BOAT?'

24th Combat Mapping Sqdn.
India

Editor:

I have just received your letter of Aug. 17 notifying me that my subscription will expire on Sept. 11. Thank you so much. I am enclosing a money order to renew my subscription.

I am especially interested in the articles in the NEWS about the coming conversion to civilian production, manufacturers bidding for new dealers, new firms trying to get franchises, etc. I am especially interested as I have been hoping to be able to reopen the small service business that I had to close when I entered the army.

It is beginning to look like I will be so far behind by the time I get out of the army that I may not be able to open my service business let alone have a good line of merchandise to sell. I wonder how many soldiers will find themselves in the same circumstances and what they can do to help themselves?

CPL. DONALD A. LOUDER

THE 'NEWS' WILL BRING HIM UP TO DATE

Philco Corp.
Philadelphia 34, Pa.

Editor:

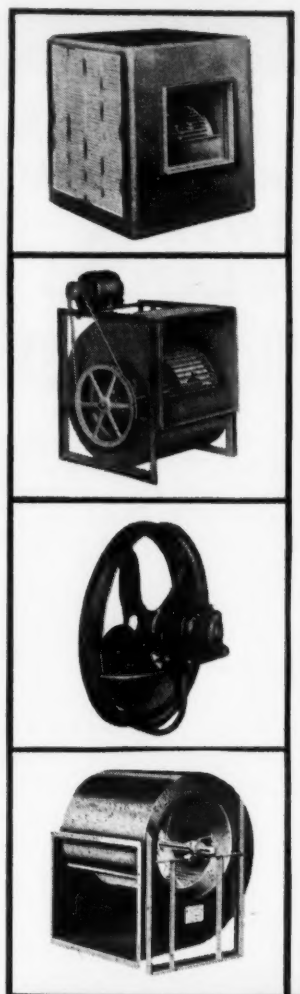
For twelve years as regional supervisor of the York Ice Mfg. Corp., Dayton, Ohio, I always looked forward to receiving my copy of the REFRIGERATION NEWS.

In 1942 the Signal Corps requested my assistance and as a result I have been here at Philco Corp. as civilian in charge of Airborne Radar Equipment.

In order to bring myself up to date relative to the air conditioning and refrigeration industry, I would appreciate it if you would again place me on your mailing list to receive periodically the AIR CONDITIONING & REFRIGERATION NEWS.

Please mail an invoice and I will send you a check.

FRANK J. MARSHALL,
Signal Corps Representative



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Available Now!

Utility Standard and Heavy Duty Blowers, Evaporative Air Coolers, Industrial Exhausters and Propeller Fans are now available under WPB regulations and priorities. Gas-fired heating equipment will be available when war restrictions are lifted to permit manufacture.

Illustrated literature, catalogs of performance data and details of Utility's marketing plans are available on request.

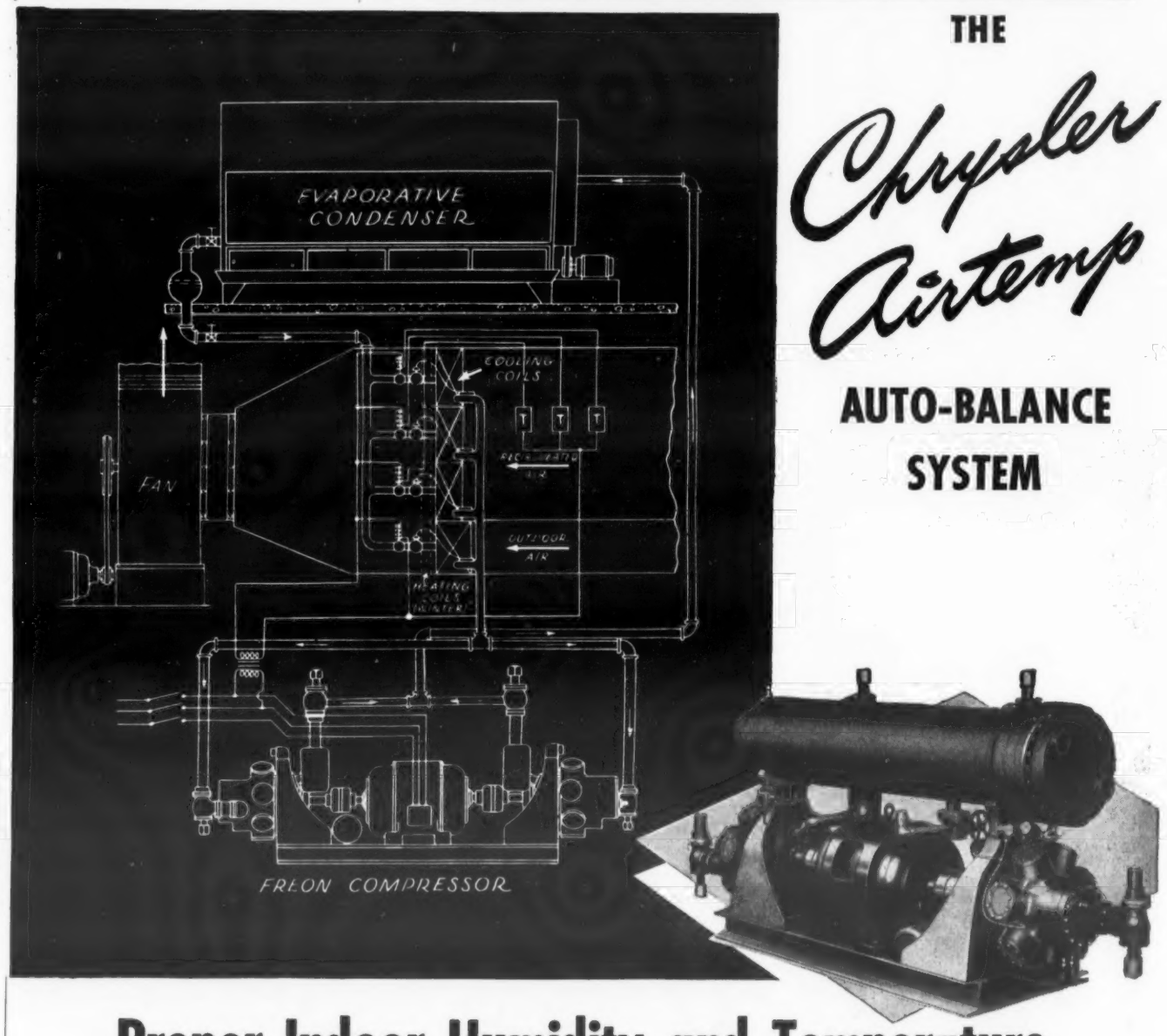
UTILITY FAN CORPORATION
4851 South Alameda, Los Angeles 11, California

WAR INDUSTRIES NEED REFRIGERATION

The use of refrigeration in industry has been greatly accelerated by the war. In peacetime this expansion may logically be expected to continue. Write for literature.

GENERAL REFRIGERATION DIVISION

Kipman AUTOMATIC REFRIGERATION



THE Chrysler Airtemp AUTO-BALANCE SYSTEM

Proper Indoor Humidity and Temperature Regardless of Load or Outside Weather Variations

VARIABLE CAPACITY RADIAL COMPRESSOR

The Chrysler Airtemp Auto-Balance system (portrayed in the chart above), in combination with the famous Chrysler Airtemp Variable Capacity Radial compressor, automatically provides a dependable scientific control of indoor climate.

Air is cooled and dehumidified by a bank of cooling coils, each of which is controlled by an automatic valve governing the thermostat which is actuated by the temperature of the air in the conditioned area. The thermostat is set to shut off or turn on the individual coils to maintain substantially constant temperature regardless of varying loads. The amount of air passing through the system, however, remains constant.

Proper dehumidifying temperature is maintained in the active cooling coils because the Chrysler Airtemp Variable Capacity Radial Compressor, with its automatic cylinder unloader, holds practically constant refrigerant temperatures under wide load variations.

Put your temperature and humidity control problems up to Chrysler Airtemp. Write to the Airtemp Division of Chrysler Corporation, Dayton 1, Ohio. In Canada, Therm-O-Rite Products, Ltd., Toronto.

Buy More War Bonds! Tune in Major Bowes every Thursday, CBS., 9 p. m., E. W. T.

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HEATING • COOLING • REFRIGERATION

ICE-X quickly cures emergency freeze ups when ice forms at the expansion valve or capillary tube. Harmless to use. Great for Freon, Carrene, or Methyl Chloride systems ...The dependable liquid anti-freeze.

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EXCLUSIVE NATIONAL DISTRIBUTOR
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JOBBERS: WRITE FOR SPECIAL PROPOSITION!

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VISOLEAK is a finely-treated colored refrigerant oil which penetrates every nook and cranny of the system. The leak is indicated by a red stain – similar to the discoloration on a carburetor in which ethyl gasoline has been used. Can be used *safely* and *effectively* with any type of refrigerant. See your jobber today. If he has not stocked Visoleak write for complete information.

WHOLESALE PRICES		CASE LOTS	
4 ounce bottle	$ 1.00	48 bottles	SAVE 10% ON CASE LOTS
8 ounce bottle	1.75	24 bottles	
1 pint bottle	3.00	24 bottles	
1 quart bottle	5.00	12 bottles	
1 gallon can	16.00	6 cans	

WESTERN THERMAL EQUIPMENT CO.
5141 ANGELES VISTA BLVD.
LOS ANGELES 43, CALIF.

Army Refrigeration Problems

By P. B. Reed

Manager, Refrigeration and Air Conditioning Division, Perfex Corp.

Methods of Varying the Capacity Of Condensing Units (Part 4)

CYCLE OF AUTOMATIC SPEED CHANGE

As an example of the operation of the automatic speed changer shown in Fig. 5, let us consider such an installation involving a 10-hp. condensing unit equipped with a two-speed, double winding, squirrel-cage induction motor running at 1,750 r.p.m. at full speed and 875 r.p.m. at half speed. At full speed the compressor runs at 600 r.p.m., and 300 r.p.m. at half speed.

There are in the installation two blower type evaporators rated the same, operating on a defrosting cycle. One of these blower coils refrigerates a storage room that is loaded in and out of every day and which imposes a fairly constant load of 3 tons per 24 hours. The other room is loaded and dispensed from only two days per week; the other five days of the week the load is extremely light, being the heat leakage load only.

Each room has its own thermostat which operates a solenoid in the suction line from its respective blower coil. As a result, the thermostat in the lightly loaded room is off most of the time during the five days, but is a full 5-hp. load during the two days per week.

Each thermostat is set to hold about 38°. With both thermostats calling for refrigeration the machine runs at full speed and develops a capacity of 100,000 B.t.u. per hour at a suction pressure of 21 p.s.i. (20° F. "Freon-12").

If either thermostat cuts off, the full capacity of 100,000 B.t.u. per hour would be thrown on one coil, the suction pressure would drop to 7 p.s.i. and the coil temperature to -5° F., and as a result the coil would quickly ice up.

To prevent this, the two pressure controls are set and operate the magnetic speed-change switch as follows: high speed pressure control set 35 p.s.i. cut-in, 12 cut-out; low-speed pressure control set 33 cut-in, 10 cut-out. Both thermostats are open, both pressure controls are open, both magnetic switches are open, and the condensing unit is not operating. One thermostat closes, its solenoid opens, the suction pressure builds to 33 p.s.i., the slow-speed pressure control closes.

After a few seconds the deceleration timer closes, and since the hold-out relay is "normally closed" it allows the magnet coil circuit of the slow-speed magnetic switch to be completed. The magnetic switch closes, 3 phase current is fed to the slow speed winding, and the motor picks up speed to 875 and runs the compressor at 300 r.p.m. at which speed it develops 50,000 B.t.u. per hour capacity at 21 p.s.i. suction pressure so the suction pressure is gradually reduced to 21 p.s.i. (20° F.) where it balances with the load of one coil.

While it is thus running at about 21 p.s.i., the thermostat in the other room calls for refrigeration (it closes) and opens its solenoid valve. This throws twice as much load on the compressor so the suction pressure starts to rise, since at 21 p.s.i. the compressor does not have enough capacity, so the suction pressure will rise until it reaches a point at which the capacity of the compressor will equal 100,000 B.t.u. per hour to balance the load from the two blowers. This will occur around 37 or 38 p.s.i., but the high-speed pressure control is set to close at 35 p.s.i. and brings the high-speed winding in. When it closes, it energizes its magnet coil to close the high-speed magnetic switch. Also it energizes the coil of the "hold out relay" which is a normally closed relay whose coil is in the high-speed control circuit and whose contacts are in the low-speed control circuit.

Therefore, when its coil is energized its armature leaves its contacts (opens) which opens the low-speed control circuit and, of course, the low-speed magnetic switch drops out. This relay is necessary in order to keep from having both magnetic switches closed at the same time, for both pressure controls are closed (the pressure has not gone down to the cut-out point of either pressure control).

Since the high-speed winding is "on," the compressor runs at 600 r.p.m. and develops full capacity. The suction pressure is therefore slowly reduced until it reaches 21 p.s.i. where the capacity being developed (100,000 B.t.u./hr.) balances the load so the suction pressure stays at about that point, being slightly reduced as the blower coil gets somewhat colder.

Finally one of the rooms is cold enough and its thermostat opens;

(Concluded on Page 23, Column 1)

You get all these qualities in
WOLVERINE COPPER TUBING

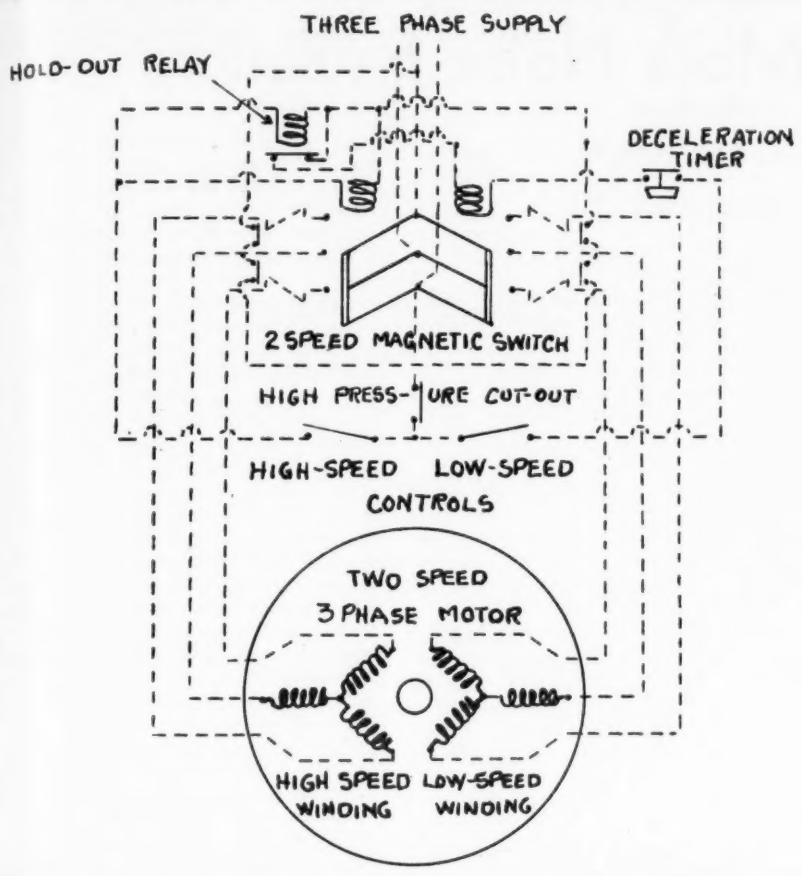
WOLVERINE TUBE DIVISION of CALUMET & HECLA CONSOLIDATED COPPER COMPANY
1411 CENTRAL AVENUE · DETROIT 9, MICHIGAN

CHICAGO SEAL SALES HEAD SKYWARD AS DEMAND INCREASES

The important fact about the rapid climb of Chicago Seal sales is that refrigeration service men themselves are providing the push. Service men *prefer* the Chicago Self Adjusting Sleevelock that assures a perfect seal even on bent or scored shafts, and they *prefer* Chicago's triple protection against leakage. They've learned that modern Chicago Seal design makes a better job, with less work, in less time, at less cost. These are the reasons why it will pay you to scorn substitutes and *demand* CHICAGO SEALS.

CHICAGO SEAL CO. 20 NORTH WACKER DRIVE CHICAGO 6, ILLINOIS

Fig. 5. Automatic Speed Change Wiring Diagram



How Speed Changer Varies Capacity

(Concluded from Page 22, Column 5)

the solenoid closes and, since the full speed of the compressor is developing 100,000 B.t.u. per hour at 21 p.s.i., the suction pressure starts downward toward about 7 p.s.i. where its capacity would be about 50,000 per hour, and which would balance with the half-load now realized.

When it reaches 12 p.s.i., the high-speed pressure control cuts-out. After a few seconds of delay to keep the motor from trying to immediately change from 1,750 to 875 r.p.m., the deceleration timer closes and feeds current to the magnet coil of the low-speed magnetic switch and it closes, throwing the motor to the low-speed winding. (In the meantime, since the high-speed pressure control is open, the coil of the hold-out relay is de-energized so it releases the armature and closes the contacts, allowing the low-speed control circuit to be made.)

The suction pressure which had dropped to 12 p.s.i. now builds back up to around 21 p.s.i. as the motor is running at half-speed on one blower coil so the normal suction pressure will prevail. The system runs thus until the second room is cold enouh, the thermostat opens, its solenoid closes, and the suction pressure again starts downward. When it reaches 10 p.s.i., the low-speed pressure control (which has been closed all this time) opens, the low-speed part of the starter opens and the condensing unit stops.

It will be noted that it is possible for one blower to come on, run the condensing unit at half-speed, the blower drop off the line (solenoid close as the thermostat opens), and the condensing unit stop from low-speed without having gone into the high-speed cycle at all.

It may be asked, why use pressure controls, why not change speeds and start and stop with the thermostats directly?

The pressure controls are used in order to obtain a defrosting cycle. If the thermostats only were used there would not be proper control over defrosting each blower coil before each running cycle, and the coils would soon ice up.

Philadelphia Institute Has Day & Night Classes

PHILADELPHIA — Courses in refrigeration repair work with both day and evening sessions have been started here at Philadelphia Wireless Technical Institute and have the approval of the State Department of Education at Harrisburg for veteran and civilian training in refrigeration service work.

Daytime classes are being conducted by J. C. Van Horn on Tuesday and Thursday mornings for a two hour session from 9 to 11 a.m. Evening classes are also conducted on Tuesday and Friday evenings from 7 to 9:30 p.m. The same course is given in either day or evening classes and students may alternate if their employment is shift work, many of whom are already taking advantage of this feature of the training program.

At the completion of the course students will receive the school diploma after satisfactorily passing all tests and 100 hours of classroom and laboratory work on domestic and commercial units.

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AVAILABLE IMMEDIATELY!

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Ansul Liquid Sulfur Dioxide is an ideal refrigerant for household refrigerators, with a long and impressive record of trouble-free performance.

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ANSUL TECHNICIANS ARE REFRIGERANT-SPECIALISTS. CONSULT THEM ANY TIME!

This Technical Book 3rd Edition on Ansul Refrigerants is still available. If you do not have a copy, send for one . . . it's free.

* REG. U. S. PAT. OFF.

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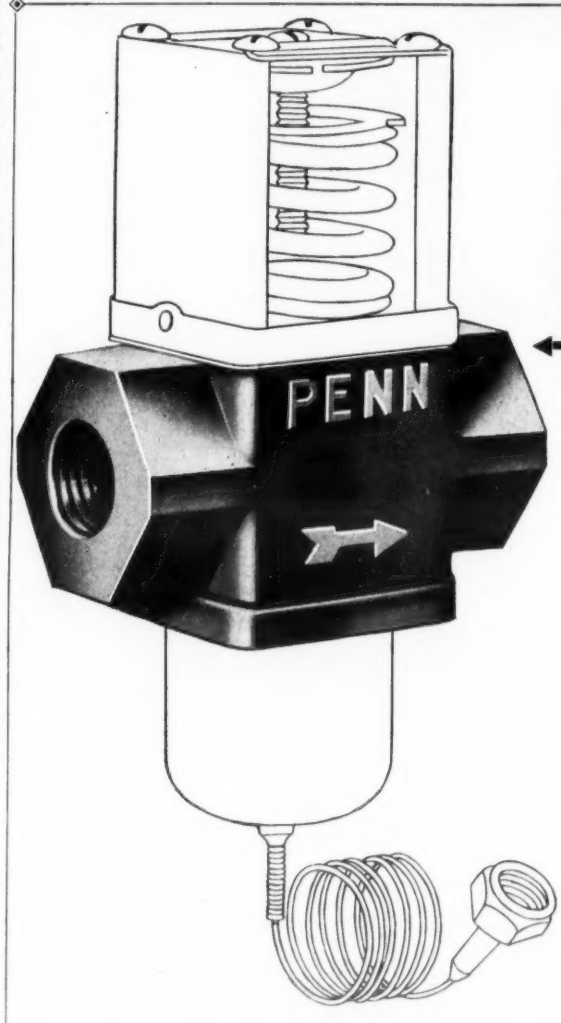

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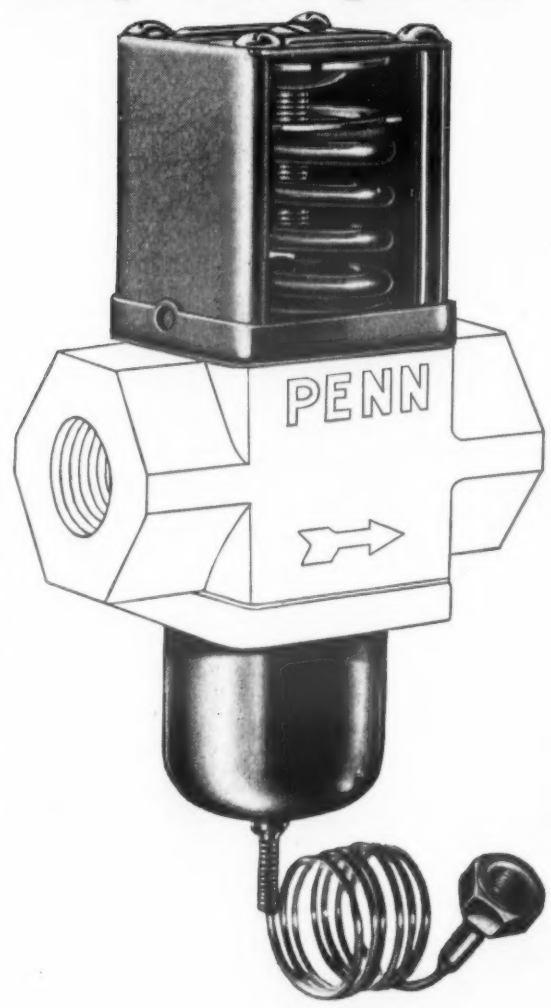

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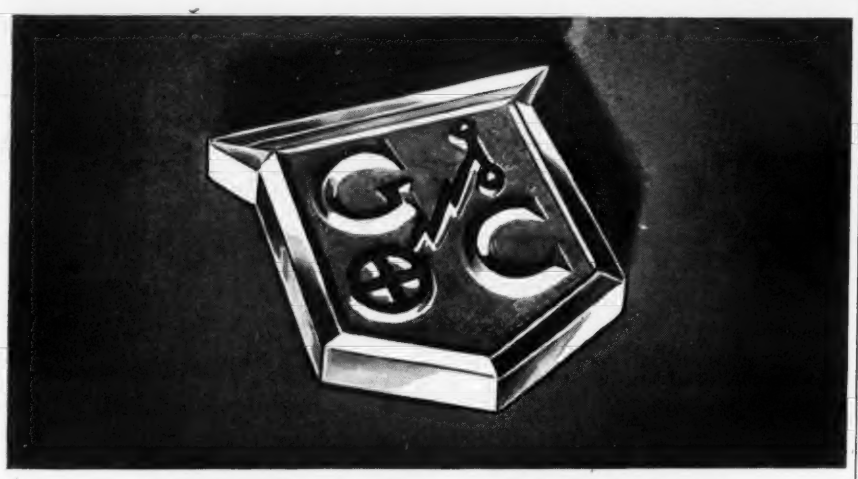

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Refrigerators Are Quiet, But Sound Expert Sees Need for More Noise Insulation

Experiments In Quieting Household Units Described for Detroit ASRE Members

By C. Dale Mericle

DETROIT — Household refrigerators, which are generally rated as quiet machines, should be quieted even more because they are used in very quiet surroundings, declared E. A. Burns of Woodall Industries, Inc., here, who discussed "Sound and Vibration Control of Refrigeration Equipment" at the October meeting of the Detroit Section, American Society of Refrigerating Engineers.

"A quiet residence is rated at 30 decibels, and a noisy residence is 50 decibels," he said. "A refrigerator would have to be 10 decibels in order not to be heard in a quiet residence, and this is as quiet as the breath through the human nose.

Noise Ratings of Prewar Household Refrigerators

"The refrigerators which we tested before the war ranged between 28 and 43 decibels. If we had two refrigerators making 28 decibels of noise each, the resulting noise would be three decibels higher, or 31 decibels. It would take 10 refrigerators making a noise of 28 decibels each to equal 38 decibels, which is still quieter than the noisiest refrigerator tested," said Mr. Burns.

"Refrigerators can and are being quieted by the use of sound absorbing materials and vibration dampening materials. Some refrigerators have been quieted as much as seven decibels by the use of sound materials," he revealed.

Pointing out that sound is produced by the vibrating parts of a machine, Mr. Burns emphasized that when these vibrating parts are attached to large panels such as the cabinet of a refrigerator, the amount of sound given off is intensified.

"The designers of refrigerators isolate the vibrations of the condensing unit from the cabinet by mounting the motor in rubber and by setting the condensing unit on springs which partially account for the refrigerator's being the quiet machine that it is. This, however, does not stop all the noise because some vibrations travel through the springs and tubing; also, the base of the condensing unit is a small size sounding board.

Sources of Vibrations

"The sources of these vibrations are the compressor, the motor, and the fan. At one time, I had a job traveling with service men in Georgia to determine the kind of problems they were experiencing. We had a service call on a refrigerator which was running continuously, yet there was some refrigeration.

"The condenser was clean, the unit was properly charged, the head pressure was high, but bleeding the job did not correct the condition. Then I noticed that the fan was unusually quiet and found that the blades had been straightened so no air was being thrown against the condenser. That is certainly an easy way to quiet a fan, but not good.

"A number of refrigerator companies have eliminated the fans and saved the service men this kind of complaint. Likewise, the hermetically sealed jobs have the motor and compressor combined, resulting in a reduced sounding board area of the parts in the machine compartment, but the speed is increased on these units, and vibrations of higher frequency result. The ear is most sensitive at 1,000 cycles and as the frequency goes up the noise is more noticeable.

"We made sound absorption tests on all of the materials known before the war to determine in what range of frequency they absorb sound and how efficient they are in these frequencies. We made a concrete tunnel 12 in. by 12 in. by 72 in. inside. The top was removable so the tunnel could be lined with any material to be tested.

Setup for Testing of Insulation Materials

"At one end of the tunnel was a loud speaker connected to the proper sound equipment. By this we were able to produce sound of any frequency and any volume we desired. A microphone was pulled through the length of the tunnel by a synchronous motor, and the sound was picked up up by the microphone and recorded on suitable electrical equipment. By this method we were able to determine the reduction in sound as the microphone moved away from the loud speaker.

"We found that when the tunnel was not lined, the sound was not reduced as the microphone moved away, but when sound-absorbing materials were in the tunnel the sound was reduced. A method similar to this was once used by the Bureau of Standards for measuring sound absorption. The results obtained by this method compare closely with those obtained by other methods.

"Sound absorbing materials are usually soft and porous so the sound can enter easily and the energy is turned into heat by frictional losses due to the sound's slightly moving the absorbing material. The amount of energy in sound is very small and therefore the heat generated is so small that it cannot be measured. For instance, if the entire population of the United States were to talk in a normal conservational tone, the sound converted into power would only be equal to that required to operate a 100-watt lamp."

Factors of Efficiency In Dampening Material

Slides were shown by Mr. Burns at this point to demonstrate, among other things, that the thicker the

(Concluded on Page 25, Column 1)

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In Santocel, however, these air spaces are so small that they not only prevent convection currents but also effectively interfere with the constant vibration of air molecules. *As a result, Santocel has even greater resistance to the flow of heat than "still air," the theoretical standard by which all insulations were previously judged.*

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Special grades of Santocel have been developed for use where temperatures over 200° F. may be encountered. These have been made opaque to infrared rays to prevent the penetration of radiant heat and they may also be devolatilized if necessary. Except for a slight increase in weight per pound, characteristics of these special grades are the same as standard grades of Santocel.

For full details, samples and technical help in applying Santocel to your particular war or postwar heat insulating problems, inquire: MONSANTO CHEMICAL COMPANY, Merrimac Division, Everett Station, Boston 49, Massachusetts.

Quick Facts on Santocel

1. Insulating value: The thermal conductivity of Santocel (a silica aerogel) is lower than that of any other material or methods of insulation employed except a highly evacuated, silvered-surface space.

2. Density: Although low for a free flowing powder, Santocel's density is about equal to that of other loose fill insulators and is higher than some bat types and the foil types.

3. Application: Santocel can be applied by building a retaining jacket about the object to be insulated, usually of lightweight sheet metal, and filling the intervening space. Being free flowing, it can be easily applied to such a construction.

4. Settling: Santocel settles to a stable density about as rapidly as other fill types.

5. Moisture sorption: Like all commonly used insulators, Santocel will not pick up significant quantities of water from the air. Practical tests have also shown that, when Santocel is applied to objects substantially below room temperature, no significant amounts of water accumulate through condensation.

6. Safety: Although Santocel is a silica, to the best of Monsanto's knowledge, based on unpublished work by the U. S. Public Health Department, it is not silicotic because of its highly unique structure. A mask is recommended for the comfort of handlers, however, since it is a light powder and therefore dusty.

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Cabinet Insulation Provides Effective Dampening of Much Refrigerator Noise

(Concluded from Page 24, Column 5)

sound-absorbing material, the more efficient it is at low frequency. Its maximum efficiency occurs at a lower frequency than that of a thinner piece of the same material, he said. By applying a thin layer (or "diaphragm") of an inert material on regular sound-absorbing material, increased efficiency at lower frequencies is obtained. In some instances paper has been successfully used as a "diaphragm," he added.

"The next problem is to determine how much quieting can be accomplished on refrigerators by the use of these materials," he continued. "In order to know which type of material to use, it is necessary to determine whether the noise is air borne from the machine compartment, or whether it is caused by vibrations of the cabinet.

"The easiest way of doing this is to test the unit in a room at least 20 decibels quieter than the unit, and compare the amount of noise the unit makes originally with the amount of noise with the machine compartment completely sealed," explained Mr. Burns.

"This kind of test can give you false results if not performed carefully," he warned, "because by enclosing the machine compartment, you can eliminate the air borne noise from the condensing unit, but the enclosure can increase the sound board area and give new sources of sound.

"A vibration pickup can be used to determine if the enclosure is acting as a new source of sound. The noise of the unit must be measured quickly or the conditions of the test will change since you have eliminated the cooling of the condensing unit by the enclosure.

"Because there is a wave pattern set up in the quiet room, it is necessary to take measurements at a number of places in the room to average this wave pattern, or you may break up the wave pattern by using a large revolving vane in the room.

"If this test shows the noise is greatly reduced, the unit can be quieted by using sound-absorbing materials. The machine compartment cannot be completely enclosed as in the test just described because we must provide for cooling. Therefore, the air is brought in and forced out through ducts. The rest of the compartment is then enclosed.

"The noise is emitted into the room through these ducts, but when they are lined with sound absorbing materials, the air flows through but the sound is absorbed. In a very long duct it is possible for a person to shout in one end of an open duct and not be heard at the other end.

"Since the ducts on refrigerators must be short, we must use a material to line them which has a maximum efficiency of the sound present.

"The next step is to determine what frequency is present in the refrigerator. This can be done by listening, by the use of a frequency analyzer, or by using filters in the electrical circuit of the sound meter.

Filters Best in Determining Frequency

"Listening is unreliable, and frequency analyzers do not pick up the unpitched and background noises. Therefore, filters are preferable.

Five electrical filters were used in our tests: 50 to 100 cycles; 100 to 200 cycles; 200 to 400 cycles; 400 to 800 cycles; and 800 to 1,600 cycles. A typical refrigerator we tested had the noise distributed in the different frequency bands as follows:

"From 50 to 100 cycles, 37 decibels; 100 to 200 cycles, 42 decibels; 200 to 400 cycles, 37 decibels; 400 to 800 cycles, 27 decibels; 800 to 1,600 cycles, 19 decibels. The noise in the 800 to 1,600 cycle band cannot be heard because it is more than 20 decibels lower than the noise in the 100 to 200 cycle band.

"Since the noise in refrigerators is in the lower frequencies, it takes thick materials or diaphragms on thick materials to efficiently absorb the sound. The materials used in refrigerators, therefore, are the result of an engineering compromise between sound reduction, size of duct, and cost.

How Refrigerator Noise Can Be Reduced

"If our original test of enclosing the machine compartment did not reduce the noise, we know the sound is caused by the vibrating panels of the cabinet. This noise can be reduced in three ways: (1) by eliminating the vibration at the source, (2) by isolating the panels from the source of vibration, or (3) by dampening the vibration. The first two methods can only be accomplished through a new design.

"Now, if the impressed vibrations on the cabinet panel are the same frequency as the natural frequency of the cabinet panel, very large results can be obtained by dampening. If, however, these frequencies differ greatly, the results of quieting by the dampening are not so spectacular.

"We have not found many cases where dampening of refrigerator panels is worth while because the heat insulation in the cabinet has dampened them already. This method should always be investigated, however, because sometimes it is the answer to quieting the unit. Certain parts in the condensing unit often need dampening, such as the base and the shroud."

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Sub-Zero Treatment Of Steels

Fundamentals In the Process of Cooling Hardened Steels To Sub-Zero Temperatures

By H. C. Amtsberg, Feeder Engineering,
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Large numbers of reports and several articles have been written on the improved properties and performance brought about by sub-zero cooling of steel parts, particularly tools. Claims of several hundred per cent improvement in life, while probably exaggerated, are not uncommon. In other cases, the treatment was a partial cure for improper initial heat treat.

Nevertheless, the value of the progress is unquestioned. It is likely to become a routine part of normal heat treating practices and sufficient authoritative information is already in evidence to warrant a vigorous program of actual shop exploitation and laboratory study.

It appears, therefore, that a presentation of the fundamentals of cooling hardened steels to temperatures considerably below room temperature properly correlated with the basic treatment cycle and related structural changes, is in order.

When steel is heated to its hardening temperature, the structure consists of a solid solution of carbon in iron, known as austenite, with or without alloying elements in solution, and with or without free iron or alloy carbides, depending on the composition and temperature. Austenite is relatively soft, tough, and ductile, even at room temperature. The carbides are very hard compounds of carbon and iron or alloying elements such as chromium, tungsten, molybdenum, and vanadium.

When hardening such steel by cooling in some suitable medium, the austenite transforms to martensite, a hard and strong constituent that is an aggregate of finely dispersed carbides in iron. This aggregate bears one similarity to suspensions such as colloidal graphite in water except that the particle size in the former is much finer.

As explained in greater detail later, an ideal hardening operation would be one in which all of the austenite was transformed to martensite upon reaching room temperature. This is true even if the final hardness desired is much lower than would result from this ideal hardening, for it is well known that the best physical properties are obtained by quenching (i.e., water, oil, or air) to maximum hardness, then tempering to the desired combination of hardness and strength versus ductility and toughness.

In many steels, however, the transformation of the soft high-temperature constituent austenite to the hard constituent martensite does not always go to completion. In other words, after the steel has been cooled to room temperature some austenite has still been retained. This is illustrated in Fig. 1, showing isothermal time temperature transformation curves of a high speed steel determined by Gordon, Cohen, and Rose (1) and an air hardening die steel by Payson and Klein (2) on which cooling curves for standard treatments have been superimposed. (For a fundamental discussion on isothermal transformation curves, the reader is referred to work of Davenport (3) and Greninger and Troiano (4).

In Fig. 1 (a), it is seen that oil quenching 18-4-1 high speed steel to room temperature transforms only about 75% of the structure to martensite while 25% remains as untranformed austenite. Fig. 1 (b) shows that about 5% of austenite remains in the chromium air-hardening steel after cooling in air to room temperature. Many other steels retain austenite in a similar manner provided the cooling is sufficiently rapid to prevent transformation at a high temperature to a relatively soft product—pearlite.

The cooling rates of the steels in Fig. 1 could be reversed and the amount of austenite retained in each case would be approximately the same. Furthermore, K. Honda and K. Iwase (5) have shown that more austenite *may* be retained by oil quenching than by water quenching,

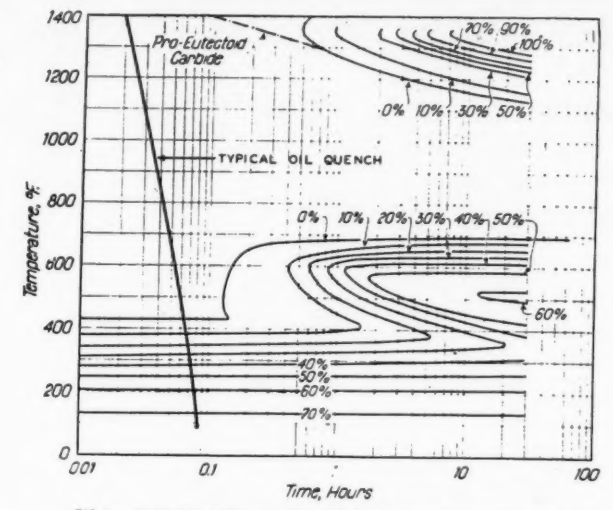

FIG 1a. TIME-TEMPERATURE TRANSFORMATION CURVE FOR 18-4-1 HIGH SPEED STEEL

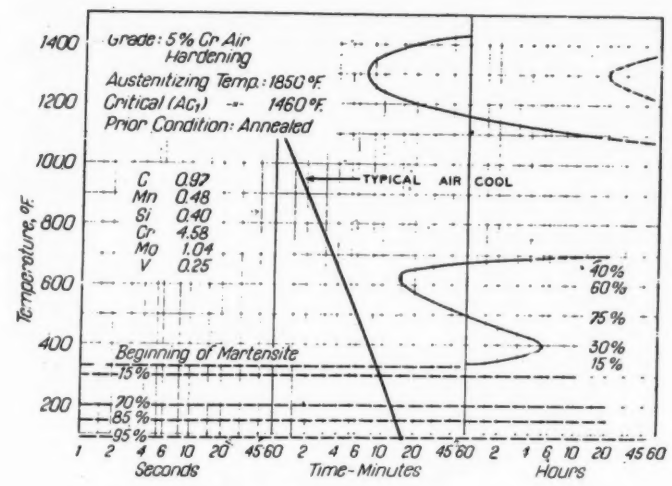

FIG 1b. TIME-TEMPERATURE TRANSFORMATION CURVE FOR 5% CHROMIUM AIR-HARDENING STEEL

probably due to the greater degree of thermal stress in the latter. It is further believed that the same phenonenon exists in higher alloy steels when air and oil quenched, respectively. It is impossible to state a specific rule, but it may be *generally* said, that the higher the carbon and alloy content and the higher the hardening temperature, the greater will be the tendency to retain austenite. Thus, it is apparent that mixed structures of this nature may be present frequently in "as quenched" steel.

Retained austenite can be made to transform in a number of ways. In a few steels, in which the amounts of retained austenite are relatively small, a sufficient length of time (sometimes months or years) at room temperature will change all or nearly all of it to martensite.

This, of course, is frequently disadvantageous particularly for dies and gauges because full hardness and dimensional stability are not obtained at once. This explains the inability of many gauges to maintain shape and size accurately over a long period of time.

In all steels, the austenite can be transformed by tempering, but frequently such high temperatures are required as to lose hardness of the martensite and cause transformation of the austenite to a softer bainite.

By again referring to Fig. 1, it is obvious that this purpose may be accomplished by simply continuing cooling of the steel to considerably below room temperature. Gordon and Cohen (6) have shown how such treatment reduces the stability of the retained austenite, that is, reduces its reluctance to transform.

In many plain carbon and low alloy steels, either medium or high carbon (including carburized), one such cooling to a temperature of -100° F. is sufficient to virtually complete all transformation.

In other steels, particularly the highly alloyed die steels, several such operations may be necessary with intermediate tempering between each sub-zero treatment. Indeed, high speed steel must be tempered in the conventional manner at least once during the heat treatment cycle in order to obtain transformation of all of the austenite.

Now that it has been determined how an austenite-free structure may be obtained, is it worthwhile to go to all this trouble? It is well-known that, from the mechanical property standpoint, the amounts of retained austenite and untempered martensite should be at an absolute minimum in the final product.

Repeated tests by Mr. Cohen and his co-workers (6, 7) have indicated higher strength and toughness without appreciable loss in hardness when all the austenite has been transformed by tempering or sub-zero treatment, especially the latter, and this is particularly so when the completely transformed structure is followed by a final temper for stress-relief.

H. Scott and T. H. Gray (Metallurgical Section Engineer and Consulting Metallurgical Staff respectively, Westinghouse Research Laboratories, have shown (see Fig. 2) a more than 200% increase in transverse bend strength over a considerable range in hardness by a cyclic treatment after hardening. This consisted of alternately tempering in boiling water and cooling to -100° F. three times followed by the final temper to the desired hardness.

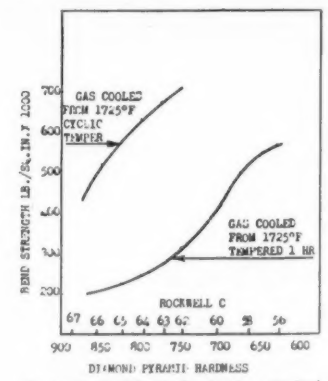

Fig. 2 Effect of Cyclic Treatment on the Bend Strength of a 1%C, 5%Cr, 1%Mo Air Hardening Steel (From Westinghouse Research Laboratories Curve Number 276027)

Evidence has been offered for high speed steel, showing that all of the austenite may be transformed by tempering one or more times at the usual temperature (1050° F.) with cooling to room temperature following each such heating. The amount of austenite that will transform is dependent on the time at the tempering temperature, and the effect on the properties of the progressively reduced amounts resulting thereof, is shown in Table 1 (from Cohen (8).)

(Concluded on Page 27, Column 1)

Table 1—Tempering 18-4-1 High Speed Steel At 1050° F.

		Hardness	Transverse Strength	Torsion Impact	Hot Hardness*
Single Tempering	6 min.	65.1 Rc	312,000 psi	16 ft.-lbs.	55.0 Rc
	½ hr.	65.7	270,000	30	57.0
	2½ hrs.	65.0	408,000	48	58.0
	5 hrs.	64.5	410,000	48	57.0
	24 hrs.	63.8	.....	39	55.0
Double Tempering plus	2½ hrs.	64.5	454,000	63	57.0
	2½ hrs.				

*Hot Hardness measured at 1000° F.

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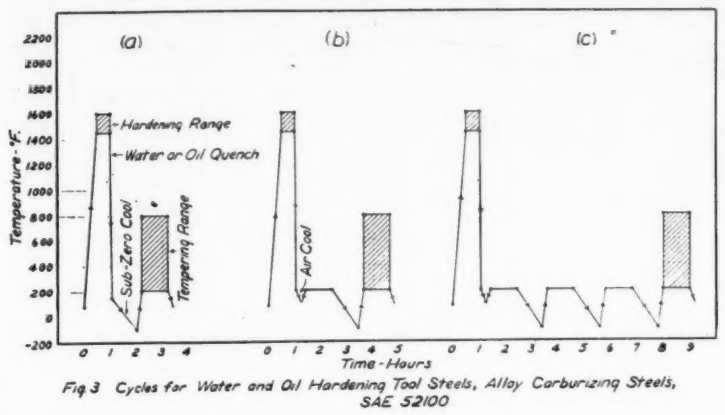


Fig. 3 Cycles for Water and Oil Hardening Tool Steels, Alloy Carburizing Steels, SAE 52100

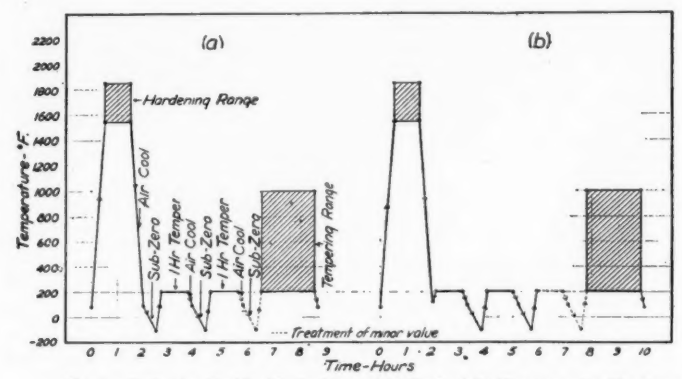


Fig. 4 Cycles for Cr-Mo, Mn-Cr-Mo, and Hi-Carbon Hi-Chromium Air Hardening Tool Steels

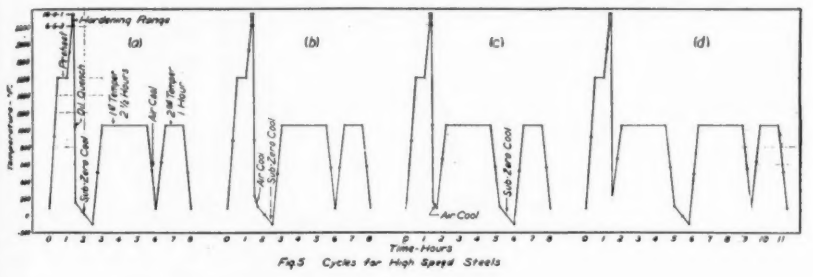


Fig. 5 Cycles for High Speed Steels

Treatment of Steels At Low Temperature

(Concluded from Page 26, Column 5)

The effect of these improved properties has been substantiated by actual shop results where reduced breakage and edge chipping, longer cutting life, and more blanks per grind have all been retained.

As previously pointed out, it is usually desirable to have the transformation take place at relatively low temperatures (under 300° F.). This necessitates a note of caution, since steels containing considerable proportions of austenite are provided with a "cushion" of high plasticity for accommodation of considerable stress.

If this "cushion" is removed, particularly at very low temperatures where plasticity in general is quite low, stresses resulting from natural dimensional changes occur which connotes a serious cracking hazard. With these facts in mind then, an approach to practical application of sub-zero treatments can be made.

For carbon or moderately alloyed steels of medium carbon content such as SAE 1045, 4140, 4340 and NE equivalents, the practical value of sub-zero cooling is questionable because the amounts of retained austenite are either nil or relatively small. Furthermore, in most engineering applications of steels of this type, tempering temperatures are fairly high and hardness considerably reduced, wherein the conversion of the austenite to bainite would not be objectionable. Bainite, untempered or tempered, is known to have excellent properties for applications not requiring maximum hardness.

FIG. 7. Hubbing master of Hi-Carbon Hi-Chromium tool steel for sinking plastic mold die cavities. It is hardened in conventional manner to 65 Rockwell C; tempered in boiling water for one hour; cooled to -100° F. in zero chamber; warmed to room temperature; and tempered at approximately 900° F. to a hardness of 60/62 Rockwell C.

On water and oil hardening tool steels, alloy carburizing steels, and other low alloy high carbon steels such as SAE 52100, the treatment has been frequently beneficial. Typical cycles are illustrated in Fig. 5.

In general, cycle (a) is satisfactory for virtually all alloy carburizing steels and, in some cases, the other steels as well. Cycles (b) and (c) offer considerably reduced danger of cracking, particularly where sharp corners or edges are present or where the part has hardened throughout the cross-section.

Cycle (c) is especially advantageous for gauges since it offers the greatest degree of stabilization.

In all cases, the final temper is the last operation and this is true of all subsequent treatments discussed. The curves indicate actual steel temperature. While the time relationships are not intended to be exact (except where specifically stated), it is significant to note that it is not deemed necessary to hold the steel at the sub-zero temperature for any appreciable length of time. It is important, however, that the steel reach the temperature given.

Treatments for the highly alloyed die steels, as shown in Fig. 4, are very similar except that two and sometimes more immersions in the sub-zero cooling medium are necessary to obtain optimum properties since the austenite is considerably more sluggish (that is, resistant to transformation).

Somewhat inferior properties result from cycle (b) as against cycle (a) due to "aging" (subsequently explained in the discussion on high speed steel). Cycle (b) does, however, offer greater freedom from the cracking hazard.

Since steels that have been sub-zero treated have considerably greater strength at a given hardness they may be used at higher hardness than with ordinary heat treating practices. By the same token, if breakage in service had been a serious problem previously, tempering to the same hardness as used with conventional treatment will produce much greater toughness.

Fig. 5 illustrates several cycles for high speed steel. The regular salt bath technique may also be employed, the only difference being the air cool from the customary quench into a salt bath held at a temperature of approximately 1100° F.

High speed steel, however, because of some anomalous behaviours, requires additional explanation. Cycles (a) and (b) are of equal effectiveness and would seem most likely to produce the best results in performance of all the heat treatments given. It should be pointed out, though, that this is not definitely established. Berlien (9) and DePoy (10) have obtained opposing results on independently conducted service tests.

Cohen (8) reported, however, that beneficial results have been obtained by sub-zero treating finished tools, which seems to indicate an "X" effect or factor that has, as yet, not been explained.

It will be noted that even when the cooling is more or less continuous from the quench to the sub-zero temperature, double tempering is recommended. Cohen (6, 8) has shown this to be because the first cool still leaves approximately 9% of the austenite untransformed and no amount of time or a lower temperature will appreciably alter this condition.

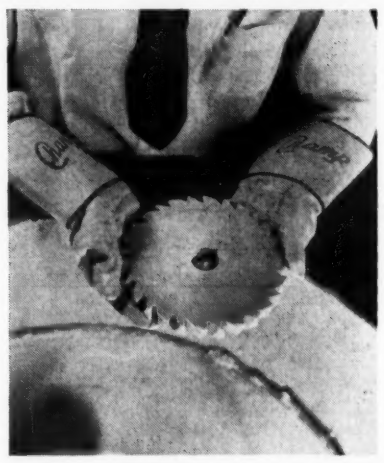


FIG. 8. Milling cutter of Hi-speed steel being removed from sub-zero chamber. It was oil quenched from 2350° F. then tempered at 1050° F. for 2½ hours before the sub-zero treatment. The milling cutter will be ready for use following another temper of one hour at 1050° F.

According to Cohen and Koh (11), it is, therefore, necessary to "condition" the remaining austenite by the first temper, so that it will transform on cooling to room temperature. Of course, it is desirable to stress-relieve this last formed martensite for best properties, hence, the second temper.

It is appreciated that many tools, particularly large ones of complicated section and/or containing sharp corners or edges, would be prone to cracking if given either treatment (a) or (b). Hence the treatments shown by cycles (c) and (d) are offered.

These may not produce properties equal to cycles (a) or (b), as pointed out above, but the improvement over conventional practice is considerable and they do provide a means of treating shapes that would be certain to distort or crack if sub-zero cooled directly.

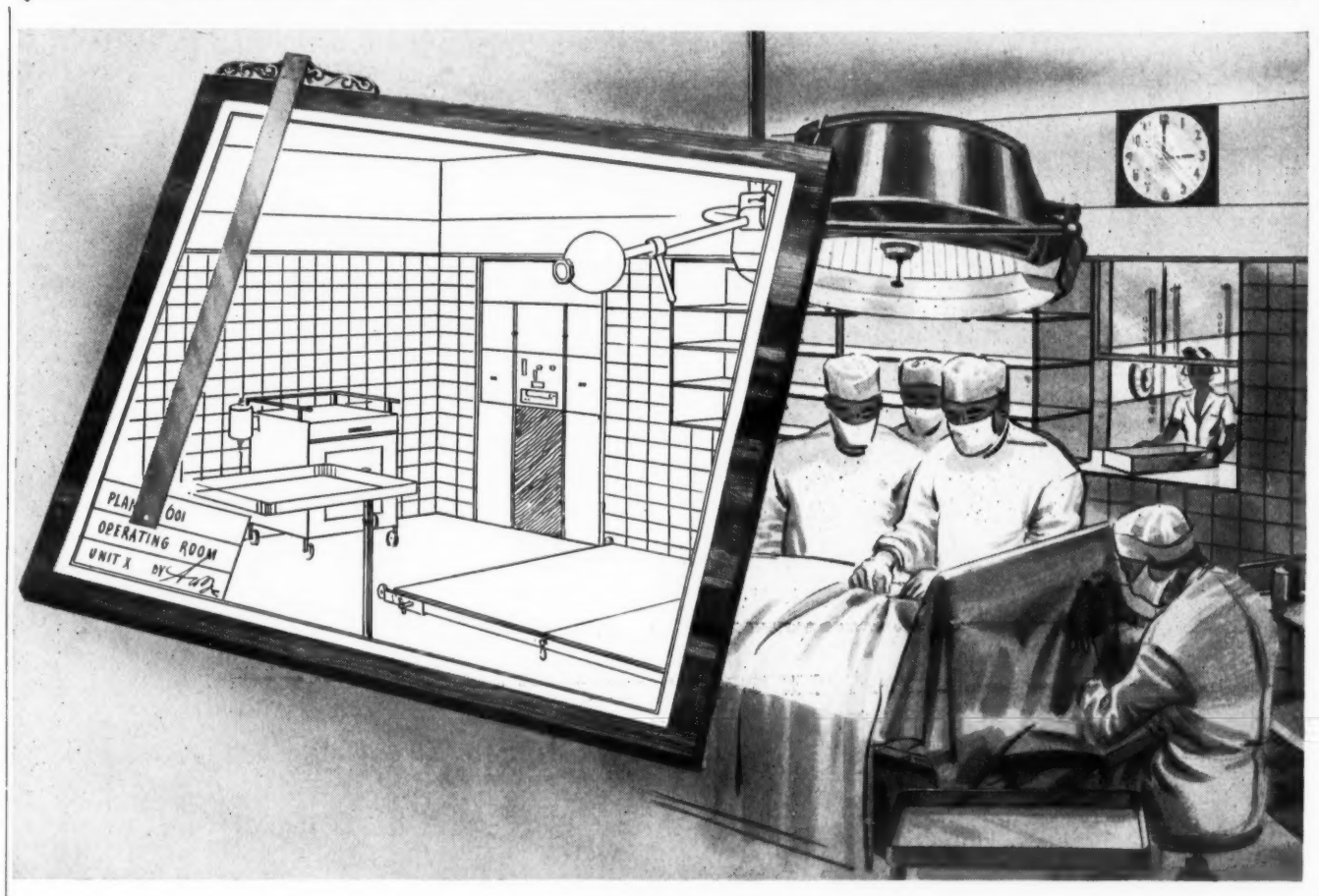
In carrying out any of the treatments illustrated, the steel should not be held at or near room temperature for any appreciable length of time before sub-zero cooling, since the austenite becomes stabilized through an "aging" phenomenon, and thereby becomes increasingly difficult to decompose. Gordon and Cohen (6) have shown that holding for as short a time as one hour has a detrimental effect and 10 hours reduces the efficiency of the sub-zero treatment 50%.

Furthermore, arresting the quench above approximately 225° F. is not recommended since a majority of the austenite would then not be transformed until the steel is cooled from the tempering temperature with an even greater hazard of cracking. Specific tempering times are given for high speed steel because they are of considerable importance.

According to Cohen (8) the first temper if less than 2½ hours at 1050° F., will not permit sufficient precipitation of carbides at the tempering temperature to allow for complete transformation of the retained austenite on cooling, while more than three hours causes some loss in both room temperature and hot hardness, strength, and toughness.

(For Bibliography on this article "Sub-Zero Treatment of Steels," turn to page 28.)

FIG. 9. Shaving dies of Hi-carbon Hi-Chromium tool steel. They are hardened to 65 Rockwell C; tempered for one hour in boiling water; and are brought to 67/68 Rockwell C by sub-zero treatment at -100° F.



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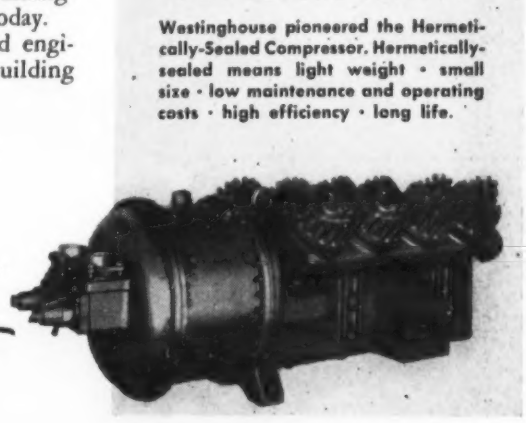

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Servicing the G-E Refrigerator Line

Editor's Note: With this instalment Air Conditioning & Refrigeration News completes the presentation of a series of articles on servicing of General Electric Co. refrigerators which began in the Jan. 17, 1944 issue.

The articles were prepared by the Product Service Division of G-E's Appliance and Merchandise Department and published with the permission of General Electric Co.

Cabinet Service Notes

The adjustment and replacement of parts of General Electric refrigerator cabinets are for the post part obvious to the service man. The following notes will aid in an understanding of the more important points of cabinet construction and service.

CONSTRUCTION:

General Electric cabinets are of two distinct types: monitor top cabinets for the top mounted monitor top machines and flatop cabinets in which the machine is usually installed in the bottom.

Early monitor top cabinets have wood frames to which the external panels and the inner liner are attached. Later monitor top cabinets and all flatop models are of all-steel construction, usually with a one-piece outer case, and the inner liner supported by Textolite breaker strips around the door opening.

DOOR GASKETS

There are three general types of door gaskets:

1. Wirf type gaskets
2. Rubber button type gaskets
3. Rubber extruded type gaskets.

Early wood frame cabinets had Wirf gaskets (cloth construction) tacked or stapled in place.

The first all-steel monitor top cabinets were equipped with rubber button type gaskets. These are easily installed by using a blunt tool to force the molded lugs on the gasket into holes formed in the door panel. Whenever it becomes necessary to replace a button type gasket with a later extruded gasket, the new one is installed by laying the tail of the gasket under the door strips.

Later monitor top cabinets and flatop models have extruded gaskets that are held in place by the door strips.

To replace, loosen the door strip screws, force tail of gasket under strip and pull screws up tight.

CABINET HARDWARE:

Door hinges and latches are held to cabinet members by screws. On later cabinets these screws are covered by escutcheon or cover plates that can be pried off. Where the latch mechanism is inside the door, replacement requires removal of the door strip after unscrewing the locking nut holding the latch to the outer door panel.

DOOR ADJUSTMENTS:

It is important that refrigerators have good door seals to prevent excessive leakage of heat and moisture into the cabinet. There should be "drag" on a .003 inch feeler gauge or paper the thickness of a dollar bill, all the way around the door opening.

Poor door seals can be corrected by one or more of the following procedures:

1. Replace a badly worn gasket.
2. Adjust door strike to hold door tighter against cabinet. Early hook type strikes can be bent inward. Where the strike is merely a plate, the holding screws can be loosened and the plate moved in.
3. Adjust or replace hinges and latches that do not hold the door firmly in place against the cabinet.
4. Straighten door that may be warped. Loosen the door strip screws about a turn and force door into correct position or slam it closed so that its own weight will line it up with the cabinet front. Tighten strip screws and check the seal.
5. Straighten cabinet front. High or low spots on the cabinet can be determined with a straight edge. Pound high spots flat with a rubber mallet. Low spots can be corrected by removing the door jamb strip, pulling case out, replacing the strip and then pounding out any high points.
6. With extruded type gaskets, bad spots around the door can be taken care of by using thin shims between the gasket and the door panel.

FOOT PEDAL DOOR OPENERS:

Some of the late monitor top and early flatop cabinets are equipped with a foot pedal door opening device. This is adjustable either by means of a turnbuckle and lock nut or at the ball and socket joint on the foot pedal.

TOP PANELS:

When replacing a machine or adjusting the cabinet wiring on a flatop cabinet, it is necessary to remove the top panel. The procedure is the same for all types, except that on later models it is necessary to loosen the two outside strip screws at the ends of the top Textolite strip. This releases clamps holding the front edge of the top panel. For all cabinets, remove the rear brackets, lift the panel and slide it forward. When replacing the panel be sure there is a good seal all around the cabinet top and around the refrigerant tubes.

UNIT COMPARTMENT PANELS:

Machine or relay adjustments on flatop refrigerators require the removal of the unit compartment panel. This is done as follows:

1. K, KT, V, and VP models—Push down on panel and pull out at top.
2. JB, B, and PB models, early—Pull up on panel and pull out at top.
3. JB, B, and PB models, late—Pull panel out at bottom and lift off clips at top.
4. 1942 models—Pull panel out at top and lift off brackets at bottom.

SHELVES:

Cabinet shelves in all early refrigerators and in standard models are plated steel. Rust can usually be cleaned off. If excessively rusted, shelves should be replated or replaced. Shelves in many later and more expensive cabinets are of stainless steel. Any discoloration can be cleaned off with scouring powder.

Both stationary and sliding shelves have been used. Some adjustment of stationary shelves can be made by bending the tangs or lugs that fit

(Concluded on Page 29, Column 3)

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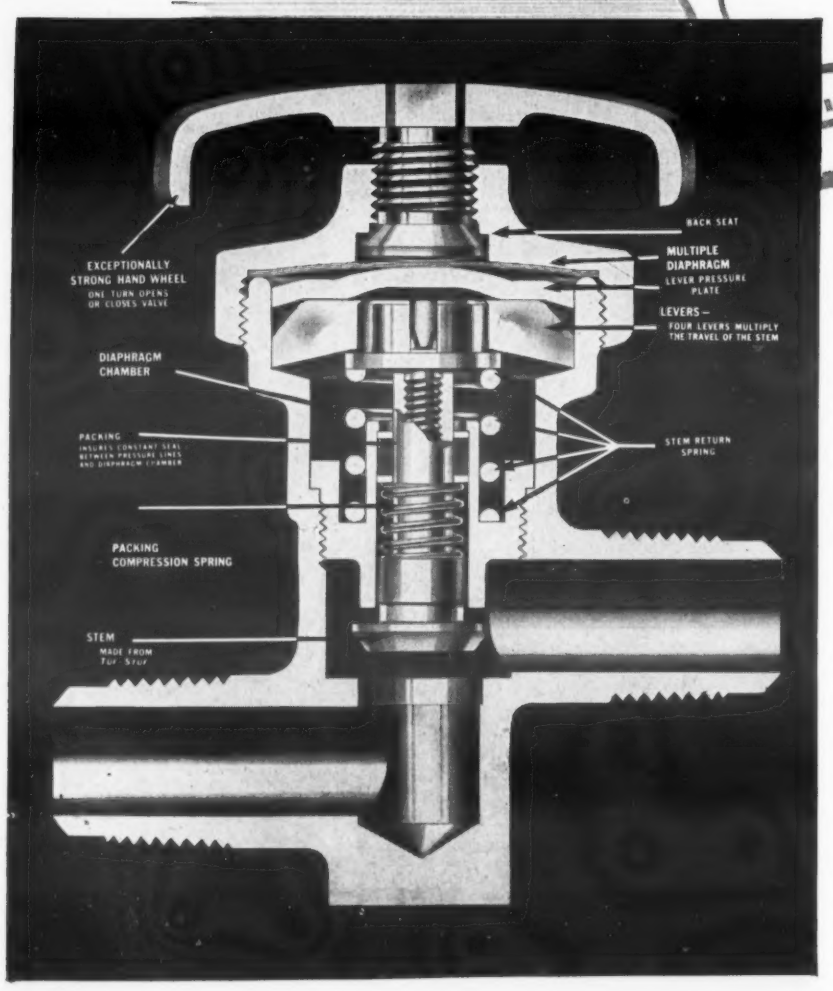

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Table 7—Type R Relay Wiring Connections

Type and Form of Machine	3-wire Cable to Compressor			2-wire Connecting Cord		3- or 2-wire Cable to Cabinet Top			3- or 2-wire Cable to Fan Motor			3- or 2-wire Cable to Capacitor			2-wire Cable to Doughnut	
*Color of Leads	R or G	W or Y	B	W	B	R or G	W	B	R or G	W	B	W	G	B	W	B
CF *except* Form B, Early Form C, and CF-28 25-cycle	3	1	2	2	A	4C	2C	A	..	..	..	..	..	..	...	...
CF Form B and Early Form C	3	1	2	B	B	B	B	B	..	..	..	..	..	..	4	2
CF-28 25-cycle	3	D	2	2	A	4	2	A	..	..	..	1	..	D	...	...
CFS	3	D	2	2	A	4	2	A	..	..	..	D	5	1	...	...
CH-1A	3	1	2	2	A	..	4	A	..	4	2	..	..	..	...	...
CH-1 Later Forms	3	1	2	2	A	..	4	A	3	1	2	..	..	..	...	...
CE *except* CE-34 and CE-340	3	1	2	2	A	4C	2C	A	3	1	2	..	..	..	...	..
CE-34A	3	D	2	B	B	B	B	B	3	D	2	1	..	D	2	4
CE-34B	3	1	2	B	B	B	B	B	3	1	2	..	..	..	2	4
CE-34 Later Forms (Not CE-34M)	3	1	2	2E	A	4E	2E	A	3	1	2	..	.	..	...	...
CE-34M	3	D	2	B	B	B	B	B	.	4	2	..	1	..	4	2
CE-340A	3	D	2	B	B	B	B	B	3	D	2	1	..	D	2	4
CE-340 Later Forms	3	1	2	B	B	B	B	B	3	1	2	..	..	..	2	4
CJ	3	1	2	2	A	4C	2C	A	..	..	..	..	..	..	...	...
FBA	3	1	2	2	A	4	2	A	..	..	..	..	..	..	...	...
CK	3	1	2	2	4	..	..	..	..	..	..	..	..	..	...	...
DK	3	1	2	2	4	..	..	..	..	..	..	..	..	..	...	...
CA	3	1	2	2	4	(Connect Oil Conditioner Leads to Terminals 2 and 4)										
LK	3	1	2	2	A	..	4	A	..	..	..	..	..	..	...	...

NOTES: (REFERRING TO LETTERS IN ABOVE TABLE)

(A) The black lead of the connecting cord is permanently attached to the black lead to the cabinet top.

(B) On all CF Form B, early CF Form C, CE-34M, CE-34A, CE-34B, and all CE-340 machines, the two-wire connecting cord and the three-wire cable to the cabinet top come to a circular connector called a "Doughnut" connector.

(C) On early production 1938 CF, CJ, and CE machines (except CE-34 and 340) the red and white leads in the three-wire cable to the cabinet top were reversed. On these machines, which had Type N relays, the white lead in this three-wire cable went to the upper terminal on the overload section of the relay instead of terminal (5) and the red lead went to terminal (5) instead of to the overload terminal.

When replacing Type N relays having this original hook-up, with Type R relays, the white lead should go to Type R relay terminal (4) and the red lead to Type R relay terminal (2). On later machines the white lead goes to terminal (2) and the red lead to terminal (4) of the Type R relay.

(D) On CE-34N machines (1937), the white lead of the three-wire cable to the compressor is attached to one of the capacitor terminals. On CE-34A and 340A (1938) machines, the white lead to the starting winding, the white lead to the fan motor and the black lead to the capacitor are connected together by a connector. On CF-28 25-cycle machines, the white lead from the compressor and the black lead from the capacitor are connected together by a connector. On CFS machines, the white lead from the compressor and the white lead from the capacitors are connected together by a connector.

(E) Early CE-34-C machines were wired with the white lead of the cabinet top cable going to terminal (4), the green lead from the cable to terminal (2), and the white connecting cord lead to terminal (4). Later production machines were wired as indicated in the table and replacement relays can be wired either way.

*Color Code: R—Red Lead. W—White Lead. B—Black Lead. G—Green Lead. Y—Yelow Lead.

Hints on Handling Cabinet Complaints

(Concluded from Page 28, Column 5)

over the shelf supports or by shimming under the supports.

Adjustment of sliding shelves can be obtained by bending the shelf or filing the supports to increase the clearance between the liner walls, and by shimming under the supports to decrease this clearance. Use paraffin to lubricate sliding shelves.

SHELF SUPPORTS:

To replace shelf supports in wood frame early monitor top cabinets equipped with DR machines, it is necessary to remove the side panels and insulation to get at the nuts or screws holding the supports in place.

The round supports in later cabinets are held in place by threading onto bolts extending through the liner. When removing a support of this type, be sure the bolt does not drop down behind the liner. If the bolt is lost, it is possible to use a special toggle bolt, Cat. No. H20H13, so that removal of the liner is not necessary.

Some of the later sliding shelf supports are held by screws that thread into tapped plates behind the liner. Remove only one support at a time so that the tapping strips will not drop out of place.

CABINET ODORS:

A refrigerator cabinet which is a storage place for food, is subject to food odors. Every cabinet will have some food odor and when excessively strong foods are stored, the odor increases. It tends to collect on the various surfaces and in extreme cases may get into the insulation.

In general, the proper procedure on an odor complaint is to impress the user with the necessity of proper food storage, such as covering foods, frequent cleaning, not using paper and cardboard containers, and not leaving the door closed when the refrigerator is not in use. Then thoroughly clean the cabinet with a warm water and baking soda solution. By removing the lower Textolite strip it is possible to tell if the insulation is badly saturated with the odor. If it is, it may be necessary to remove the insulation and either air it out, bake it out, or replace it.

INTERIOR SWEATING:

Moisture condensation on the shelves, walls, evaporator door, and other surfaces during hot, humid weather is a normal condition. The interior of the cabinet is cold and moisture immediately condenses when the air enters. Such a condition can be kept at a minimum by having a good door seal, keeping moist foods covered, defrosting frequently, and opening the cabinet door as little as possible.

FINISH TOUCH-UP:

Small nicks and scratches should be touched up. Spot with small pencil brush, using air dry Dulux or lacquer. Smooth with quick motion of finger and polish lightly after twenty-four hour drying period. Larger scratches and stains require sanding to feather edge and spraying. Proper care of the finish will make it last. Recommend General Electric Liquid Wax as a cleaner and to protect all exterior painted surfaces. Chipped porcelain finishes should be touched up or patched with porcelain patching materials to improve appearance and prevent rusting.

90% Want FM Radios, Survey by G-E Shows

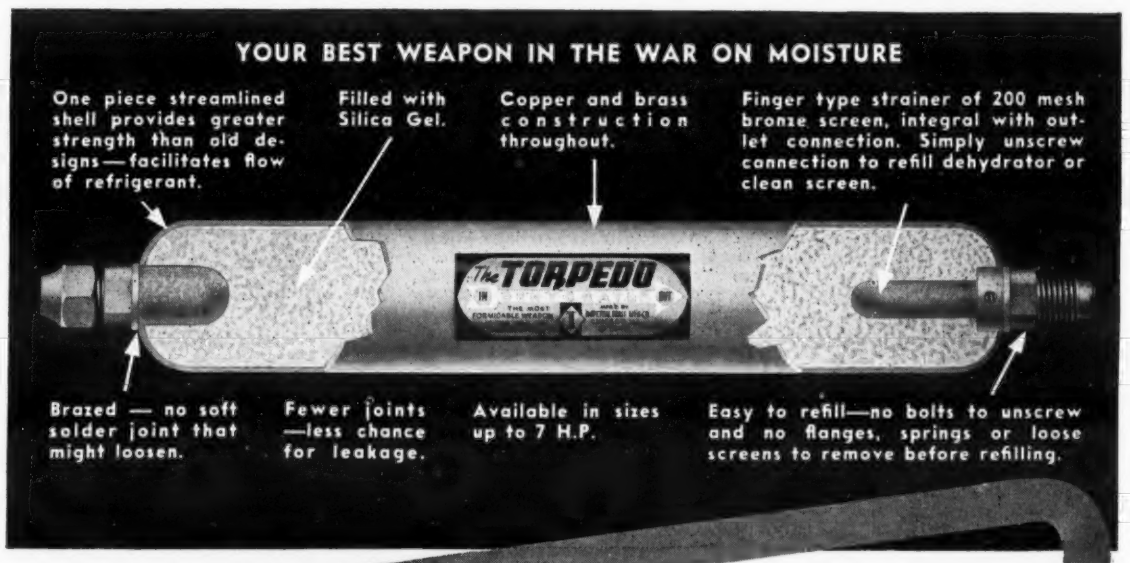
SCHENECTADY, N. Y.—While 90% of 1,538 radio dealers and 16,635 stockholders of General Electric Co. want to buy an FM (frequency modulation) radio receiver, nearly half will probably wait until an FM station is operating in their locality before making a purchase, believes H. A. Crossland, sales manager of G-E's receiver division, who announced results of a recent survey.

However, 26.9% plan to buy an FM receiver as soon as they're available, and to date, one in ten of those queried already had purchased a model, and 80% of those replying indicated they were familiar with FM.

There seems to be a trend away from table model sets toward console radio-phonograph combinations, the survey revealed, according to Mr. Crossland. Table models are now owned by 38.9% and floor combinations by 13.5% Contemplated postwar purchases, however, indicate table models will be purchased by 22.2% and floor combinations by 33.8%.

Portable radios are apparently due for big sales volume after the war, with some 85% of those surveyed planning to buy one. At present 2,268 stockholders declared that they used a portable radio 75% of the time indoors.

Because of shortages of parts and tubes, 15% of the radios owned by those questioned in the survey are now out of order. Some 20% said that they had one radio out of order while 10% said two or more of their radios were not operating.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Brazed — no soft solder joint that might loosen.
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Easy to refill—no bolts to unscrew and no flanges, springs or loose screens to remove before refilling.

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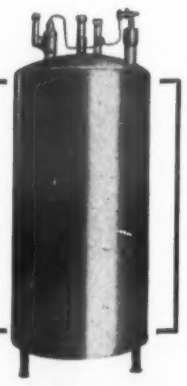

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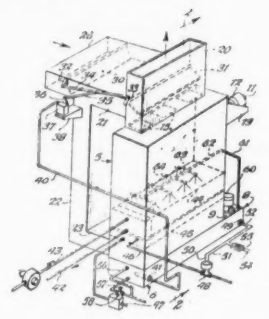
PATENTS

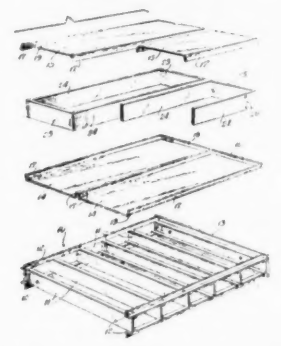
Weeks of Oct. 3 & 10

22,553. (REISSUE.) APPARATUS FOR MAINTAINING THE DESIRED TEMPERATURE OF LIQUIDS. Martin H. Olstad, Bayside, and Allan E. Williams, White Plains, N. Y., assignors to Niagara Blower Co., New York, N. Y., a corporation of New York. Original No. 2,321,933, dated June 15, 1943, Serial No. 455,394, Aug. 19, 1942. Application for reissue Oct. 11, 1943, Serial No. 505,866. 8 Claims. (Cl. 257—4.)



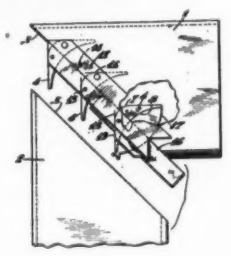
6. A heat exchange device for maintaining a fluid in a selected temperature range determined by the character of the fluid by cooling a stream of said fluid and preventing the temperature thereof from falling below said temperature range, comprising means forming a chamber having an air inlet and an air outlet, a fan arranged to force a stream of air from said inlet, through said chamber and out through said outlet, a cooling coil arranged in the stream of air passing through said chamber, means for continuously conducting the said stream of fluid to be cooled through said cooling coil, said stream of air being normally heated through heat derived from said stream of fluid passing through said cooling coil, recirculation means for conducting a part of the stream of air leaving said chamber back to said air inlet, means for applying heat to said stream of fluid, and thermostat means responsive to the temperature of one of said streams to adjust the amount of air so conducted back by said recirculation means and also said means for applying heat to said stream of fluid to prevent the temperature of said fluid in said cooling coil from falling below said temperature range.

2,359,379. REFRIGERATING APPARATUS. Fred Ophuls, New York, N. Y., and Daniel T. O'Neil, Lowell, Mass., assignors to Fred Ophuls & Associates, Inc., New York, N. Y., a corporation of New York. Application July 8, 1942, Serial No. 450,156. 3 Claims. (Cl. 214—10.5.)



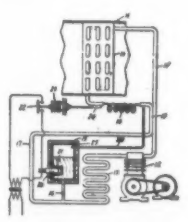
1. For the formation of a stack for the refrigeration of discrete units, the combination of a plurality of frames each of which includes a plurality of substantially parallel cross members spaced from each other to provide passages for the flow of refrigerating fluid through the stack and longitudinal members at the ends of said cross members to connect the cross members together and projecting outwardly from both faces of the frame, a plurality of trays each of sufficient length to extend across a plurality of the cross members of a frame and each having a flange at each of its lengthwise sides, there being at least a sufficient number of trays to substantially cover one face of substantially each frame to be used in a stack and the width of each tray being substantially equal to one dimension of the units to be refrigerated or a multiple thereof, a plurality of bars for assembly substantially horizontally between substantially each two frames to support substantially each frame on another below it and provide spaces within the stack for the units to be refrigerated, the length of each bar being at least substantially equal to the length of a tray and a transverse dimension of each bar being substantially equal to or a multiple of another dimension of one discrete unit to be refrigerated, and there being at least twice as many bars as there are trays required to cover one face of substantially each frame in a stack, said frames, trays and bars being separate and distinct elements for assembly together to form a stack and to permit disassembly of a stack.

2,359,579. AIR CONDITIONING CONDUIT FITTING. Robert E. Peck, Cincinnati, Ohio, assignor of one-fourth to Wm. Burchenal and one-fourth to Morss Lippincott, both of Cincinnati, Ohio. Continuation of application Serial No. 308,591, Dec. 11, 1939. This application July 6, 1942, Serial No. 449,882. 5 Claims. (Cl. 138—37.)



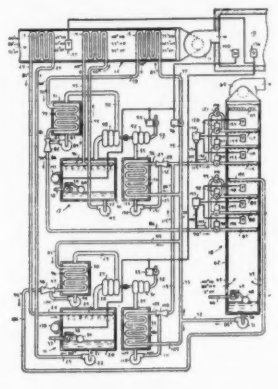
2. A fibrous fitting for use in conduit construction comprising two elements, each having inner and outer sections, and each having an end edge extending diagonally of its length, said edges fitted together to form a desired angle fitting, and vanes secured along the meeting edge of the inner sections to direct air currents through the fitting and removable fasteners extending through walls of said inner sections and embedded in said vanes.

2,359,595. REFRIGERATING SYSTEM. Fred O. Urban, Fort Wayne, Ind., assignor to General Electric Co., a corporation of New York. Application July 27, 1943, Serial No. 496,321. 10 Claims. (Cl. 62—3.)



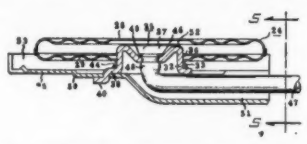
1. A refrigerating system comprising a compressor and a condenser and an evaporator connected in series to provide a normal refrigerant circuit, a fixed restrictor in said circuit for controlling the flow of refrigerant from said condenser to said evaporator, a closed liquid refrigerant storage chamber arranged outside the normal series path of refrigerant in said circuit and having restricted communication affording passage of liquid refrigerant between said chamber and said condenser, and means dependent upon a condition of operation of said system for varying the ratio of the amount of refrigerant in said chamber to the amount in said circuit to vary the capacity of said system.

2,359,624. AIR CONDITIONING SYSTEM. Robert B. P. Crawford, Miami, Fla., assignor to Minneapolis-Honeywell Regulator Co., Minneapolis, Minn., a corporation of Delaware. Original application March 3, 1939, Serial No. 259,561. Divided and this application Dec. 13, 1941, Serial No. 422,829. 6 Claims. (Cl. 261—39.)



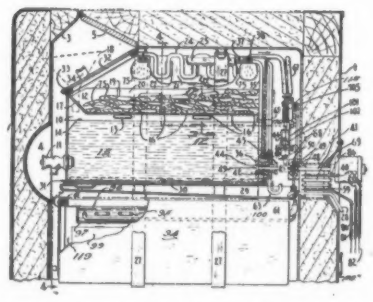
1. In a cooling tower, the combination of, a substantially vertical chamber, means for circulating air upwardly through the chamber, upper and lower sprays in the chamber adapted to spray fluid in contact with the circulating air whereby the fluid is cooled and the air is heated, means for supplying fluid to the upper sprays from a source of relatively warm fluid, and means for supplying fluid to the lower sprays from a source of relatively cool fluid, whereby a counterflow heat exchange between the air and the fluid is provided, said lower sprays including a plurality of sprays spaced longitudinally in the chamber, and means for controlling the operation of the lower sprays to admit relatively cool fluid therethrough at a level wherein the temperature of the fluid corresponds substantially to the wet bulb temperature of the air.

2,359,676. CONTROL APPARATUS. Estel C. Raney, Franklin County, Ohio, assignor to Ranco, Inc., a corporation of Ohio. Application Feb. 20, 1942, Serial No. 431,765. 2 Claims. (Cl. 137—156.5.)



1. A pressure responsive device comprising a plate provided with a centrally disposed group of openings and a channel extending from within said group to the edge of said plate; a hub member having a central opening and peripheral lugs; an expansible diaphragm with opposed flexible walls joined at their outer edges, one of said walls being secured at its central portion to said hub; and a tube connected at one end to said hub member and within said central opening and communicating with the interior of said diaphragm, the lugs on said hub being disposed in the openings in said plate and clinched at the underside thereof to retain these members in assembled relationship, said tube being disposed in the channel in said plate to perclude lateral movement of said tube.

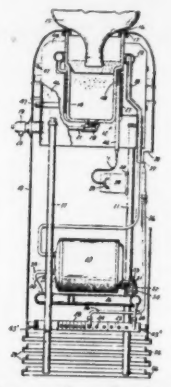
2,359,780. REFRIGERATING MECHANISM. Glenn Muffly, Springfield, Ohio. Application Oct. 29, 1938, Serial No. 237,629. 23 Claims. (Cl. 62—2.)



2. In an automatic ice maker, a surface upon which ice is frozen, a reservoir for water to be frozen, pumping means for causing water from said reservoir to flow over said surface, the parts being so arranged that unfrozen water from said surface is returned to said reservoir, cyclically controlled means for refrigerating said surface intermittently, and a power element for actuating said cyclically controlled means.

2,359,790. REFRIGERATING MACHINE. Dean C. Rinehart and Albert A. Ralston, Fort Wayne, Ind., assignors to General Electric Co., a corporation of New York. Application Dec. 31, 1942, Serial No. 470,814. 13 Claims. (Cl. 62—141.)

1. A refrigerating machine or the like including a frame comprising a plurality of upright posts, a casing surrounding said posts and having its bottom end open and spaced from the bottom ends of said posts and having an air outlet opening a substantial distance from its bottom end, a plurality of louver members rigidly secured to said posts near the bottom ends thereof and spaced apart longitudinally of said posts to provide openings for admitting air to the interior of said casing, each of said louver members having a configuration conforming to the cross section of said casing, said louver members and said posts constituting a rigid supporting structure for the rest of said machine, and a heat exchange apparatus within said casing and supported by said posts in the path of air between said louver members and said air outlet



2,359,796. METHOD AND APPARATUS FOR REFRIGERATION. George W. Russell, Jr., Silver Spring, Md., assignor to American Instrument Co., Silver Spring, Md., a partnership. Application May 26, 1943, Serial No. 488,579. 5 Claims.

(Concluded on Page 31, Column 1)

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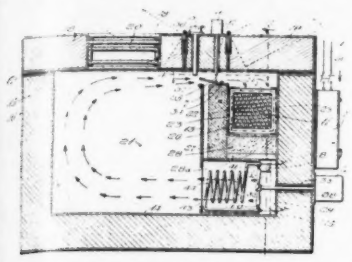
Patents (Cont.)

(Concluded from Page 30, Column 5)

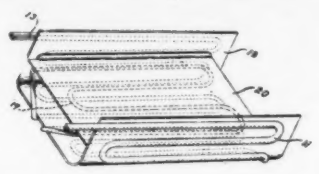
1. In a system of refrigeration, the method of controlling temperatures which comprises supporting a cold body in a confined passage for a gaseous mixture in which the temperature maintained by the cold body varies from a high adjacent



the top of the cold body to a low adjacent the bottom of the cold body, selecting strata of the gaseous mixture in the course of its passage over the cold body and forcibly circulating the selected strata of the gaseous mixture in a confined path around the cold body.

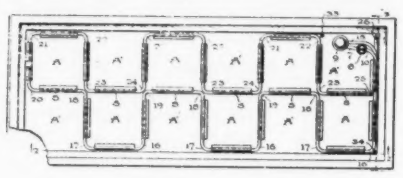
2,359,926. METHOD OF FORMING REFRIGERATION UNITS. William E. McCullough and Allen L. Goldsmith, Detroit, Mich., assignors to Bohn Aluminum & Brass Corp., Detroit, Mich., a corporation of Michigan. Application Aug. 22, 1939, Serial No. 291,382. 1 Claim. (Cl. 29—157.3.)

The method of forming a refrigeration unit which comprises extruding a length of tubing of aluminum material having a flat side, bending the length of tubing into a flat sinuous form, placing the tubing with part of its flat side in contact with the under surface of a first sheet of aluminum material and with part of its flat side in contact with the upper surface of a second sheet of aluminum material, the two sheets being spaced apart, brazing the tubing to the sheets by means of brazing rod formed of aluminum material, bending said first sheet to form walls of



a refrigeration unit, and bending said second sheet into place to form the shelf of the refrigeration unit.

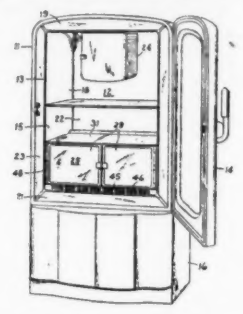
2,360,074. BEVERAGE COOLER. Floyd L. Robison, Fort Smith, Ark. Application Dec. 20, 1943, Serial No. 514,963. 2 Claims. (Cl. 62—89.)



1. The combination with an open top rectangular beverage cooling cabinet, of vertically spaced continuous tubing bent to form refrigerating coils for the cabinet and said coils arranged to provide a plurality of open top equal sized rectangular compartments, certain compartments being entirely enclosed by the coils and others utilizing a wall of the cabinet as an outside closure, and said entirely enclosed and partially enclosed compartments being staggered with respect to each other lengthwise of the cabinet.

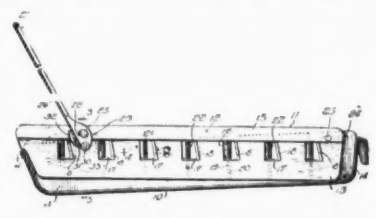
2,360,189. REFRIGERATION APPARATUS. William B. Anderson, West Springfield, Mass., assignor to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., a corporation of Pennsylvania. Application Dec. 7, 1943, Serial No. 513,208. 8 Claims. (Cl. 62—89.)

1. In a refrigerator having a main food-storage chamber comprising front, rear, side, top, and bottom walls, said front wall comprising a door affording access to said chamber, and means associated with the chamber to refrigerate the air therein, the combination with said refrigerator of a high-humidity compartment located in said chamber, said compartment comprising front, rear, top, and bottom walls, said front wall comprising a door affording access to said compartment, all of said walls of the compartment extending the full width of the chamber



to cooperate with the side walls thereof to form a six-sided enclosure, the front, rear, top, and bottom walls of the compartment being spaced from the front, rear, top, and bottom walls, respectively, of the chamber to provide an air duct for the circulation of the refrigerated air in the chamber around the receptacle.

2,360,249. ICE CUBE TRAY. Logan L. Mallard, Norfolk, Va., assignor of one-half to H. Clay Hofheimer, II, Norfolk, Va. Application May 4, 1939, Serial No. 271,781. 20 Claims. (Cl. 62—108.5.)

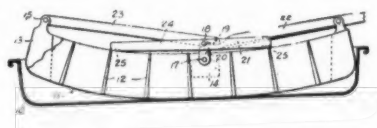


1. A grid for forming ice cubes in a tray comprising a grid unit including a plurality of longitudinal elements substantially co-extensive in area arranged in relatively slidable face to face relation, and lever means operable while said unit is in contact with the bottom of the tray providing relative sliding movement of said elements, said elements being arranged in a manner whereby said sliding movement will effect the release of the cubes from each of said relatively slidable elements.

2,360,250. COMBINATION CIRCULAR ICE MOLD AND FREEING TOOL. Logan L. Mallard, Norfolk, Va. Application Dec. 4, 1941, Serial No. 421,645. 5 Claims. (Cl. 62—108.5.)

1. In combination with a mold having a rounded or circular mold cavity, a tool for removing frozen or congealed substances from said cavity comprising a hand tool provided with a handle and a shank projecting from said handle and terminating in a head having a plurality of prongs projecting therefrom and adapted to be embedded in the ice mass, and a bracket adapted to detachably engage the mold and hold the tool in operative position with respect to the mold.

2,360,251. FLEXIBLE GRID AND LEVERAGE ICE RELEASE. Logan L. Mallard, Norfolk, Va. Application Dec. 4, 1941, Serial No. 421,649. 10 Claims. (Cl. 62—108.5.)



1. In combination with a freezing tray for containing a substance to be congealed or frozen in the freezing unit of a refrigerator, a grid structure, means rendering said grid structure bowable or bendable to release frozen substance therefrom, and means for bowing the grid comprising linkage mechanism pivotally connected at opposite extremities and at an intermediate point to said grid and an operating member pivotally connecting said linkage mechanism, said operating member being rotable about its pivotal connection to cause the linkage mechanism to exert a pull on opposite extremities of the grid and simultaneously exert a bowing thrust on the grid.

2,360,286. REFRIGERATION. Arthur C. Shuart, Evansville, Ind., assignor to Servel, Inc., New York, N. Y., a corporation of Delaware. Application July 10, 1942, Serial No. 450,399. 10 Claims. (Cl. 62—108.5.)

3. An ice tray and grid combination comprising a tray to hold water, and a

grid assembly fitting therein and defining ice compartments, said grid assembly including a plurality of transverse members of plastic material and a longitudinal wall structure formed of a plurality of wall segments of plastic material and all in interlocking relationship, said wall segments being in substantial alignment to form the longitudinal wall with the transverse members intersecting the longitudinal wall where the wall segments meet, and metallic means at each of said transverse members forming a latching engagement with the top of the wall segment on one side of it and the wall segment on the other side of it having an integral portion forming a latching engagement with the central portion of the wall segment.

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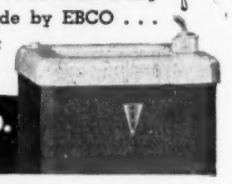

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PAYMENT in advance is required for advertising in this column.

POSITIONS AVAILABLE

BEST OPPORTUNITY in all America both during and after the war. San Diego, Calif. Offers you everything worth living for. We need good service men. Will pay top wages, time and a half and double time for over 44 hours plus liberal commissions. WRIGHT REFRIGERATION SERVICE, 1327 India St., San Diego 1, Calif.

REFRIGERATION ENGINEER to work with an old reliable company in the development of farm and home freezers. Excellent opportunity for right man. Must have sound ideas and initiative. Outline education, experience in first letter and indicate salary expected. Box 488, Ithaca, New York.

SHOP SUPERINTENDENT. Must have ability to train and handle men. Thorough knowledge of compressor rebuilding, motor repair, and general shop practice required. Permanent position, well established organization. Salary $325 per month. Box 1618, Air Conditioning & Refrigeration News.

MECHANICAL ENGINEER experienced in the design of refrigerating compressors and auxiliary equipment by a large Mid-West manufacturer. Reply confidential. Position permanent with excellent opportunity. Box 1622, Air Conditioning & Refrigeration News.

DESIGNER and Refrigeration Engineer thoroughly familiar with commercial refrigeration for old established manufacturer soda fountains, ice cream cabinets, food refrigerating equipment. Must be capable, assuming responsibilities in development, designing, redesigning our equipment. Position offers unusual opportunity for experienced, imaginative, inventive man. State full particulars. THE FISCHMAN CO., 10th & Allegheny Ave., Philadelphia 33, Pa.

DRAFTSMEN. UNUSUAL opportunity for refrigeration draftsmen and engineers. Give education, experience to us in your first letter; also salary expected. Those engaged in defense work cannot be considered. INTERNATIONAL HARVESTER CO., 2626 W. 31st Blvd., Chicago Ill. Refrigeration Division.

INSTALLERS WANTED for cold storage Locker Plants. Steady work with foremost designers and builders of plants in the country. Jobs largely on installation of Plants in the Middle West and South. All types of men needed. Write or wire, Refrigeration Division, AMANA SOCIETY, Amana, Iowa.

EQUIPMENT FOR SALE

OFFERING for immediate delivery: Ice making coils, 4 to 16 tray size; commercial blowing coils; Reach-in refrigerators, 6 and 30 cu. ft.; electric water coolers; condensing units. Specifications on request. Priorities required. MANN, 595 Sixth Ave., New York 11, N. Y.

ELECTRIC WATER coolers. Industrial and cafeteria models, blower coils and bottle coolers. Immediate delivery. All new guaranteed equipment of standard make. Prices right. Write or wire today. RAMSEY-BENNETT CO., 727 Bolivar Road, Cleveland 15, Ohio.

250 FRIGIDAIRE model "N," "W350," "W233," and "C." All with 110-220 V. 60 cycle. REP. IND. Motors. Remanufactured ice cream cabinets. Send for list and price. EDISON COOLING CORP., 310 E. 149 St., New York 51, N. Y.

CONDENSING UNITS. New Lipman ½-hp. units in stock. Immediate delivery. Still in factory crates, complete with low-pressure control. $107.35 F.O.B., Kansas City, Mo. 25% with order. Priority required. BLUE FLASH REFRIGERATION CO., 3939-41 Broadway, Kansas City, Mo.

HUSSMANN 68. cubic foot porcelain reach-in refrigerators. Brand new. Other sizes available. General Electric self-contained milk coolers 4 and 6 can capacity. All sizes blower diffusers and condensing units. 13 and 20 cubic ft. freezer cabinets. Phone Rittenhouse 6359 or write. JORDON REFRIGERATOR CO., 235 N. Broad St., Philadelphia 7, Pa.

FRANCHISES WANTED

LEADING JOBBERS South Africa, established connection, want to contact manufacturers and/or representatives all types refrigeration and air conditioning accessories including Fractional Horse Power Electric Motors and components with view to representing them and marketing their products, Southern Africa. Box 1599, Air Conditioning & Refrigeration News.

AN AGGRESSIVE sales executive, experienced in commercial refrigeration and air conditioning together with a refrigeration engineer have founded a new, amply financed distributorship. Manufacturers of equipment and accessories in this field interested in representation in Eastern Pennsylvania and adjacent territory are invited to write Box 1631, Air Conditioning & Refrigeration News.

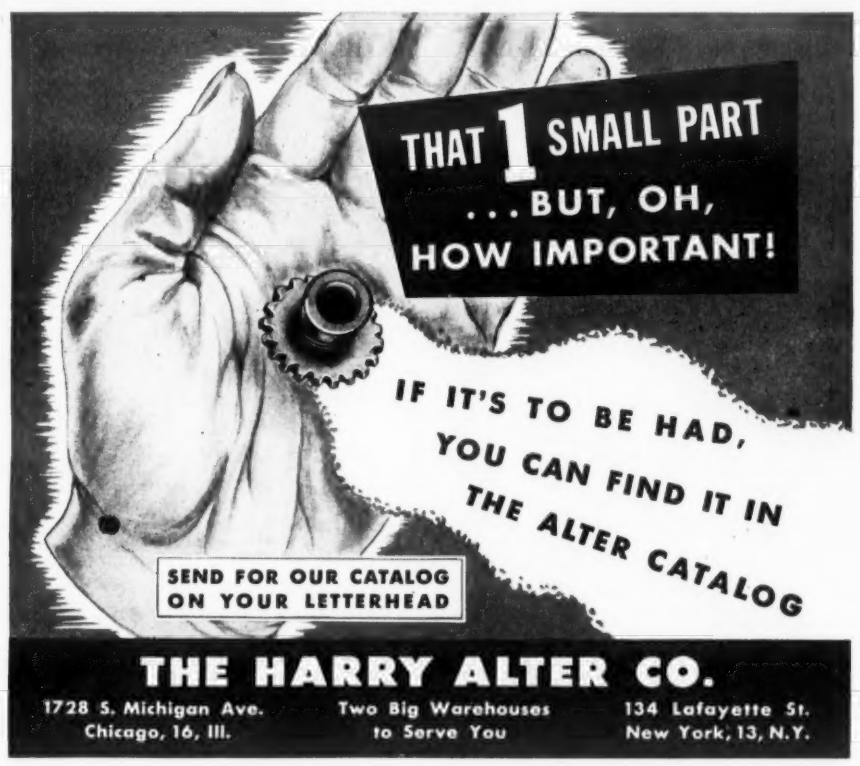
BUILDING SOLD. Forced to liquidate entire stock of new and used equipment. Unable to obtain help to move tremendous stock. Compressors, receivers, condensers, pulleys, fittings, 100 Frigidaire "N" units, Kelvinator units, others. New Fedder heat interchangers, floats, evaporators, air cooled condensers. DENNETT, 311 Canal St.,New York City.

POSITIONS WANTED

SERVICE MANAGER with 23 years experience in the refrigeration service business. Commercial and domestic. Also oil burners. Would like to locate on West Coast, preferably Portland, Ore., or would be interested in a field job. Free to travel. Box 1630, Air Conditioning & Refrigeration News.

PACIFIC NORTHWEST. Commercial refrigeration service man qualified for service manager. Engineering and sales experience. Factory trained Kelvinator and Frigidaire. 18 years experience sales, servicing, installing, and engineering commercial refrigeration. Box 1633, Air Conditioning & Refrigeration News.

EXECUTIVE ENGINEER, 43, ten years production, ten years refrigeration and air conditioning experience, at present connected with firm of consulting engineers, desires connection with medium size, progressive manufacturing concern as chief engineer to take full charge of product design, development, and production. Small investment considered. Box 1632, Air Conditioning & Refrigeration News.


THAT 1 SMALL PART
...BUT, OH, HOW IMPORTANT!
IF IT'S TO BE HAD, YOU CAN FIND IT IN THE ALTER CATALOG
SEND FOR OUR CATALOG ON YOUR LETTERHEAD

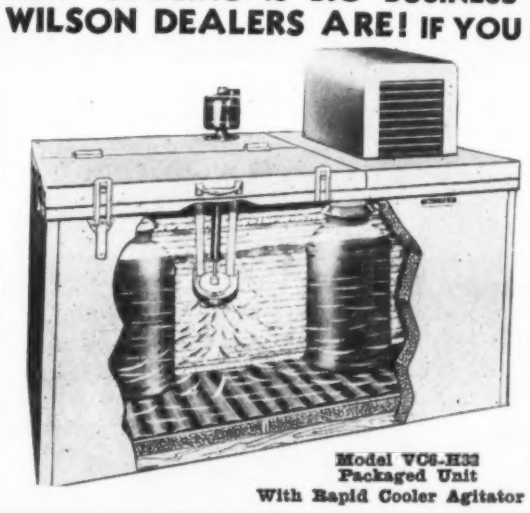
THE HARRY ALTER CO.
1728 S. Michigan Ave. Chicago, 16, Ill. | Two Big Warehouses to Serve You | 134 Lafayette St. New York, 13, N.Y.

REACH-IN REFRIGERATORS

AVAILABLE FOR IMMEDIATE DELIVERY WITH OR WITHOUT CONDENSING UNITS (PRIORITY REQUIRED)

FOGEL REFRIGERATOR COMPANY 5400 Eadom St., Philadelphia 37, Pa. • Since 1899

MILK COOLING IS BIG BUSINESS . . . . ARE YOU GETTING YOUR SHARE? WILSON DEALERS ARE! IF YOU HAVE MODERN SALES AND SERVICE, WRITE NOW.



Model VC6-H32 Packaged Unit With Rapid Cooler Agitator

WILSON

SYSTEMS OF MILK COOLING

A TYPE FOR EVERY REQUIREMENT

3. Verti-Coil with RAPID-COOLER AGITATOR

- The Wilson Verti-Coil Cooler equipped with the RAPID-COOLER AGITATOR (Pat.) WILL COOL TWICE THE CABINET CAPACITY DAILY WITH EXTREME RAPIDITY.
- ALL WILSON MILK COOLERS ARE NOTED FOR: RAPID AND UNIFORM COOLING. MAXIMUM COOLING EFFICIENCY. LOW COST OF OPERATION. LIFE-TESTED CONSTRUCTION.

This advertisement is one of a series on Wilson Commercial Refrigeration

WILSON CABINET CO. SMYRNA DELAWARE

Field Store Becomes A.M.C. Associate

(Concluded from Page 1, Column 4)

country have filed their application with A.M.C. to be considered as associates.

The A.M.C. is made up of a group of privately owned department stores who became associated some 25 years ago for the exchange of retailing information and the pooling of their buying power.

Member stores have generally used their "private brand" lines of refrigerators and other appliances as a means of meeting price competition. The private brand lines are displayed and sold side by side with a wide variety of national brand lines.

The appliance program for A.M.C. members is developed by a Major Appliance Steering Committee which is made up of experienced appliance buyers from member stores, who work in conjunction with the central office appliance representatives.

The major appliance committee is composed of: James Ogden (chairman), J. L. Hudson Co., Detroit; Philip Duboff, Bloomingdale's, New York; Glen Farrell, Joseph Horne Co., Pittsburgh; M. K. Thompson, The R. H. White Co., Boston; and B. B. Zients, New York office representative.

Committee work is under the general direction of Raymond Reed, home furnishing merchandise manager of the New York office, and Joseph P. Kasper, president and director of the A.M.C.

Patrich Deluhery Joins Chicago Appliance Firm

CHICAGO — Clarence Tay, manager of Appliance Distributors, Inc., of Chicago, has announced the appointment of Patrick J. Deluhery to the firm's executive staff.

Deluhery was formerly district representative of the Oldsmobile division of General Motors.

N.R.S.J.A. Announces Convention Program

(Concluded from Page 1, Column 3)

Place of the Refrigeration Supply Jobber in Postwar Distribution."

Another "open" social event is the cocktail party planned for Monday night, Nov. 20, from 5:30 to 7:30 p.m.

Following is the tentative program for the N.R.S.J.A. convention:

SUNDAY, NOV. 19

2:00 to 5:00 p.m.
Registration.
6:30 p.m.
Dinner and meeting of directors.

MONDAY, NOV. 20

9:30 a.m.
Meetings of regional jobbers' groups
Metropolitan New York group
Middle Atlantic group
Midwest group
New England group
North Central States group
Southeastern group
Western group
Those not belonging to any established regional group
Discussion of regional problems
Discussion of formation of stronger regional organizations (reports to be made at general session).
12:15 p.m.
Luncheon—Open to members of the industry.
Speaker—Albert Haring, Professor of Marketing, Indiana University, "The Place of the Refrigeration Supply Jobber in Postwar Distribution."
2:00 p.m.
President's report, H. W. Small.
Report of Special Committee to Study Trends in the Refrigeration Industry, R. W. Sheperdson, chairman.
Reports from chairmen of regional groups.
Open session for free distribution of problems of members.
5:30 to 7:30 p.m.
Cocktail Party—Open to members of the industry.
8:00 p.m.
Meetings of:
Special Jobbers Cup Award Committee.
By-laws Committee.
Trade Relations Committee.
Finance Committee.
Membership Committee.
Committee on Committees.

TUESDAY, NOV. 21

9:30 a.m.
(Title to be announced later), H. T. McDermott, secretary, R.S.E.S.
(Title to be announced later), A. B. Schellenberg, president, R.E.M.A.
(Title to be announced later), F. B. Millham, Deputy Chief, Special Equipment Branch, WPB.
2:00 p.m.
Report of Manufacturers Relations Committee, Alex H. Holcomb, Jr., chairman.
Other committee reports.
Report of Nominating Committee, B. V. Blazer, chairman.
Election of new directors.
5:00 p.m.
Meeting of directors.
Election of officers and consideration of other matters.
7:00 p.m.
Dinner for members of the industry. Speaker—George F. Taubeneck, editor and publisher of AIR CONDITIONING & REFRIGERATION NEWS.

WEDNESDAY, NOV. 22

9:30 a.m.
Open session for free discussion problems of members.
Final adjournment at noon.

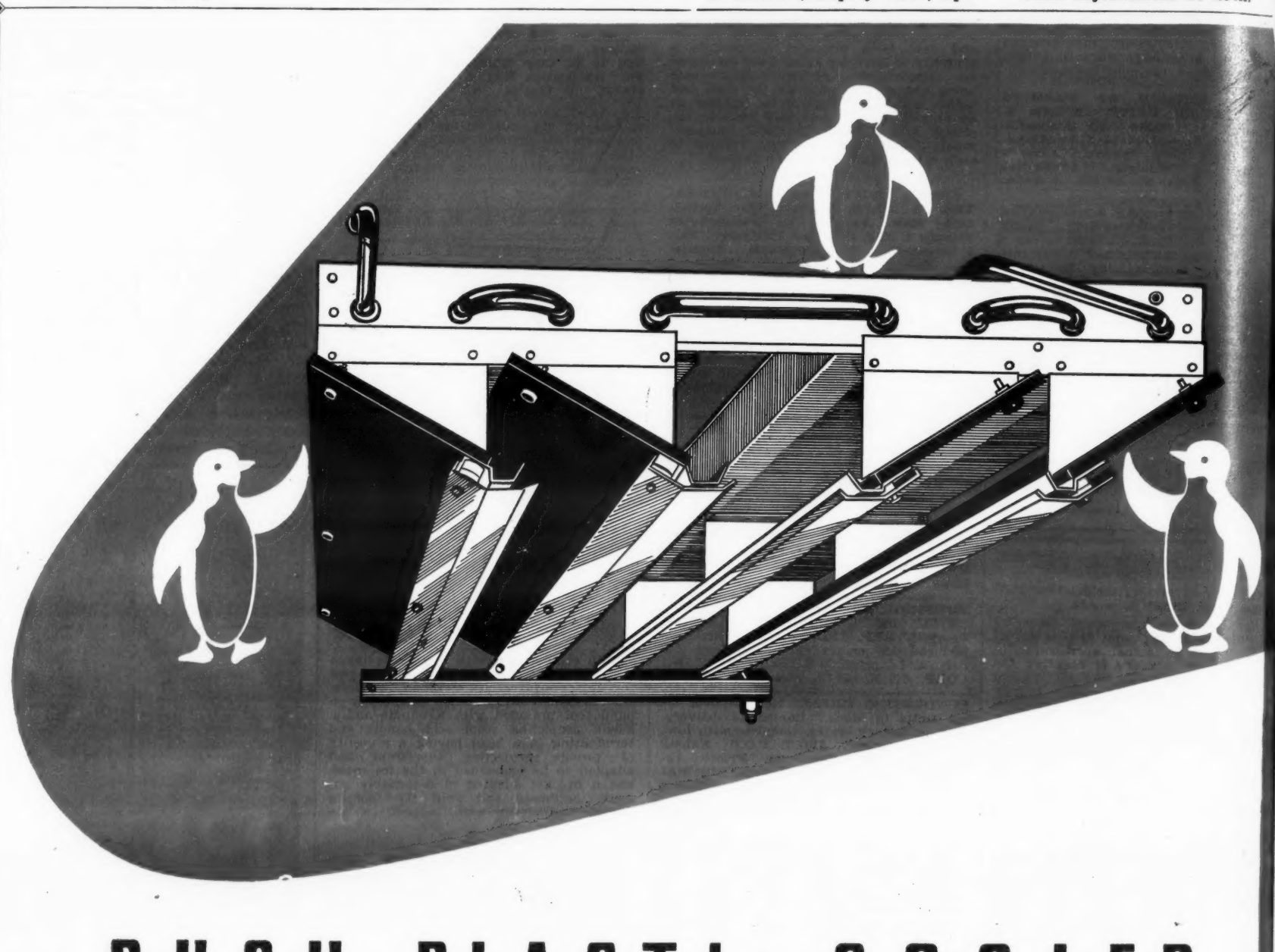
HUBBELL
YODER
REFRIGERATION PLATES
THE HUBBELL EVAPORATOR PLATE
Every square inch of surface is prime heat pick-up.
For Frozen Food Lockers, Deep Freeze Cabinets, Milk Coolers, Fruit and Vegetable Counters, etc.
Write for complete information. It will pay you.
ENGINEERING SERVICE INC.
820 Standard Building • Cleveland, Ohio
Sole Agents for
YODER REFRIGERATION INC., Manufacturers

NEW 1944 CATALOG

Write for copy on your letterhead

Washing Machine Parts Catalog will not be issued in 1944

SERVICE PARTS CO.
2511 Lake St. Melrose Park, Ill.



BUSH PLASTI-COOLER

● NOW AVAILABLE ● FAST DELIVERIES

A noteworthy contribution by BUSH to the refrigeration industry, the BUSH PLASTI-COOLER combines the efficiency of the famed Bush Finned Coil with the proved advantages of sturdy plastics . . . the original application of plastics to the low side field. Coil features aluminum fins spaced 1/3" — 1/2" — 3/4" and copper tubing (5/8" to 100 lin. feet — 3/4" over 100 lin. feet). Baffles of gleaming, jet-black plastics eliminate all sweating . . . enhance appearance. Scientifically calculated pitching insures maximum cold air discharge. A choice of widths is available for different box sizes. The BUSH PLASTI-COOLER is the most modern evaporator at any price. For advanced engineering . . . BUY BUSH. Other types also available ... write for our latest Bulletin TODAY!

BUSH

BUSH MANUFACTURING CO.

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